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# REPORTS

FROM

# COMMISSIONERS, INSPECTORS,

AND OTHERS:

*FORTY-SEVEN VOLUMES.*

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*— (29.) —*

MINES AND MINERALS; OPIUM;

RULE OF THE ROAD AT SEA.

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SESSION 1.—5 *February* 1895——6 *July* 1895.
SESSION 2.—12 *August* 1895——5 *September* 1895.

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# COMMISSIONERS, INSPECTORS,

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*FORTY-SEVEN VOLUMES:—CONTENTS OF THE*

TWENTY-NINTH VOLUME.

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N.B.—*THE* Figures *at the* beginning of the line, *correspond with the* N° *at the foot of each* Report; *and the* Figures *at the* end of the line, *refer to the* MS. Paging *of the Volumes arranged for The House of Commons.*

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MINES AND MINERALS STATISTICS:

[c. 7609.] Report of the Departmental Committee on Mining and Mineral Statistics. p. 1

OPIUM:

[c. 7723.] Final Report of the Royal Commission on Opium, with Annexures. Vol. VI. 31

[c. 7723-I.] Historical Appendices, with an Index of Witnesses and Subjects, and a Glossary of Indian Terms used in the Evidence and Appendices. Vol. VII. 221

[c. 7751.] Supplement to the Report of the Royal Commission on Opium: Note by the Hon. the Maharaja Bahadur of Durbhanga, K.C.I.E. 545

RULE OF THE ROAD AT SEA:

[c. 7908.] Report of the Committee appointed by the President of the Board of Trade on the Screening of Ships Side Lights, with Minutes of Evidence and Appendices. Vol. I. Report. 551

[c. 7908-I.] Vol. II. Evidence, Appendices, and Index. 569


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# REPORT

OF

## THE DEPARTMENTAL COMMITTEE

ON

# MINING AND MINERAL STATISTICS.

**Presented to both Houses of Parliament by Command of Her Majesty.**

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# Report of the Committee appointed to inquire into the whole Question of Mining and Mineral Statistics.

TO THE RIGHT HONOURABLE HERBERT HENRY ASQUITH, Q.C., M.P.,
HER MAJESTY'S PRINCIPAL SECRETARY OF STATE FOR THE HOME DEPARTMENT.

SIR, Home Office, September 1894.

In obedience to the instructions contained in letter B 14643/1 of the 20th December 1893, "To consider the whole question of Mines and Mineral Statistics in "view of the Recommendation No. XI. of the Royal Commission on Mining Royalties "as to collecting information with regard to mines," we have the honour to lay before you a report upon the subject.

We have considered the following documents which you have submitted to us:—

1. The Report of the Royal Commission on Mining Royalties, with special reference to the recommendation (No. XI.) as to collecting and publishing information with regard to Mines.

2. The memorandum of Dr. Munro on the collection and publication of statistics referred to in paragraph 51 of the above report, and the observations by the Mineral Statistics Branch of the Home Office thereon. B 14643/2.

3. The observations of Mr. Wardell and Dr. Le Neve Foster on the suggestions and recommendations of the Royal Commission on Mining Royalties. B 14643/3-4.

4. The memorandum submitted by the Mineral Statistics Branch of the Home Office concerning the preparation of "The Mineral Statistics" and "The Summaries of the "Statistical portion of the Reports of the Inspectors of Mines." B 14643/1.

5. The memorandum of the Mineral Statistics Branch of the Home Office suggesting the addition of certain information to the "Mineral Statistics." B 14643.

We divide our Report into two parts: the former describes the nature of the official mining publications issued at the present time, whilst the latter contains remarks upon the suggestions of the Royal Commission on Mining Royalties and our recommendations concerning future mining statistics and reports.

## PART I.

### PRESENT STATISTICS.

### OFFICIAL MINING PUBLICATIONS.

**1.** Statistics relating to Mining have been prepared by the Inspectors of Mines since the year 1851. During the last few years the following publications have been issued annually by the Home Office:— Official mining publications.

i. Summaries of the statistical portions of the reports of Her Majesty's Inspectors of Mines.
ii. Separate report by each inspector for his own district.
iii. The Mineral Statistics of the United Kingdom.
iv. Lists of Mines at work.
v. List of Record Plans of abandoned Mines deposited in the Home Office.

In addition to these annual publications, special reports are prepared relating to accidents causing great loss of life.

#### i. *Summaries of Mining Statistics.*

**2.** The Summaries of statistics relate to:— Summaries.

(*a.*) Persons employed.
(*b.*) Fatal accidents.

(*c.*) Ratios of deaths from accidents to persons employed and to tonnage of mineral raised.

(*d.*) Quantities of mineral raised under the Mines Regulation Acts.

(*e.*) Information concerning the Boards for examining candidates for certificates of competency as managers of mines.

### ii. *Separate Reports of Inspectors of Mines.*

Reports of Inspectors.

**3.** For the purposes of the inspection of mines, the United Kingdom together with the Isle of Man is divided into thirteen districts. Each Inspector of a district, in obedience to the provisions of the Mining Acts (Coal Mines Regulation Act, 1887, 50 & 51 Vict. c. 58. s. 43, and Metalliferous Mines Regulation Act, 1872, 35 & 36 Vict. c. 77. s. 20), makes an annual report of his proceedings during the preceding year to a Secretary of State, which is laid before both Houses of Parliament. The report contains details concerning persons employed, mineral output, accidents, and any prosecutions for offences, together with general observations on the condition of the district.

### iii. *Mineral Statistics.*

Mineral Statistics.

**4.** In the year 1848, Mr. Robert Hunt, Keeper of Mining Records, commenced the issue of official mineral statistics by publishing the output of copper and lead ore in Cornwall and Devon, for the years 1845, 1846, and 1847. The collection of statistical information by the Government was gradually extended, and from 1854 to 1882 an annual volume was published giving the output of coal, metallic ores, and other minerals for the whole of the United Kingdom. Statistics relating to the output of certain minerals also appeared annually in the Reports of the Inspectors of Mines from the year 1864.

**5.** In 1883, on the recommendation of a Committee, representing the Treasury, the Home Office and the Department of Science and Art, it was decided to transfer the duties of the Mining Record Office to the Home Office, with a view to prevent the collection of Mineral Statistics by two Government Departments and the publication of conflicting figures. A Committee of Inspectors of Mines was then appointed to consider how the work of preparing the annual volume of Mineral Statistics should be carried out; the result was the publication and presentation to Parliament annually of the Blue Book entitled "The Mineral Statistics of the United Kingdom," as it appears at the present time. This book is the only official record of the mineral production of the country. It consists of about 140 pages, and contains the following matter:—

(*a.*) Particulars of the output and value of all minerals raised from mines, the output and value of certain minerals obtained from open workings, and also the quantity and value of the metals contained in the various ores.

(*b.*) Statistics relating to the import and export of minerals and metals, railway and canal traffic of coal, salt, &c.; shipments of coal, clay, and other minerals, coastwise; particulars of blast furnaces, giving the production of pig-iron and the quantity of iron ore and coal used in its manufacture; the average weekly prices of coal and metals in the London market; lists of smelters of ores, with their addresses; also an Appendix giving the output and value of all the minerals raised in the British Colonies and Possessions. The book likewise contains maps showing the Mines Inspection districts, and a list of the names and addresses of the Inspectors.

The information under (*a*) is obtained by the Inspectors of Mines, partly from statutory returns as to quantities and partly from information afforded voluntarily.

The information under (*b*) is ascertained without statutory powers by the Mineral Statistics Branch of the Home Office, independently of the Inspectors of Mines, partly by means of circulars and letters issued through the Department and partly from official and other sources.

### iv. *List of Mines at work.*

List of mines.

**6.** This list gives the name and address of the owner of each mine, its situation, in some instances the name of the agent and manager, and other special information. It is prepared by the Inspectors of Mines, and issued annually in one volume.

v. *List of Record Plans of Abandoned Mines deposited in the Home Office.*

**7.** This book contains a list of the plans of abandoned mines which are sent to the Secretary of State by owners, in accordance with the provisions of the Mines Regulation Acts. It is published annually. Record plans.

## PART II.

### Future Statistics.

#### 1. Suggestions of the Royal Commission on Mining Royalties.

**8.** The suggestions made by the Royal Commission on Mining Royalties with respect to Mining Statistics (pages 12 and 80 of the Final Report of the Commission) are as follows:— Suggestions of Mining Royalties Commission.

Page 12.—Par. 51. "During the course of our inquiries our attention has been "directed to the fact that the statistics relating to minerals issued in this country "are incomplete, and at times misleading. One cause of this may be the absence of "compulsory powers to obtain necessary information. Beyond all doubt our mining "statistics fall far behind those issued by other States (including our Colonies) whose "mineral resources may be comparatively small. There should be but little difficulty "in ascertaining accurately the total amount of royalties and wayleaves, the average "price of coal, and the average wages, but on these points at the present time our "information is either wanting or incomplete. The administration of the Acts relating "to mines, and the issue of mineral statistics under such Acts, is at the present time "entrusted to the Secretary of State for the Home Department. We venture to "suggest that Her Majesty's Government should consider the advisability of re-"organising and extending what we may call the Department of Mines in the Home "Office, and that to such Department should be committed the duty of collecting and "publishing accurate information relating to the following amongst other matters:—

"1. The quantity of coal used for manufacturing and domestic purposes "respectively.
"2. The amount of royalties and wayleaves.
"3. The average price of coal at the pit's mouth and at various points of "consumption.
"4. The wages and hours of labour of miners.
"5. Imports and exports of mineral.
"6. The comparison of the progress of the mining industry in the United Kingdom, "and in Foreign countries.

"Where necessary, additional statutory powers should be conferred on the Depart-"ment, to enable it to collect the necessary information, due care being taken to prevent "the disclosure of individual returns."

Page 80.—XI. "We suggest that the Department of Mines in the Home Office "might be re-organised and extended, with such additional statutory powers as may be "necessary for the purpose of collecting and publishing accurate information with "regard to mines and minerals."

**9.** We have carefully discussed these various points and have taken evidence upon some of them; and we submit the following observations:—

#### 1. *Quantity of Coal used for Manufacturing and Domestic Purposes.*

This subject is surrounded with difficulties. To illustrate this, we need simply refer to the only careful estimate of the kind hitherto prepared. In the year 1866* Sir Roderick I. Murchison and Mr. Robert Hunt were appointed by the Royal Coal Commission, to inquire as to the quantity of coal consumed for manufacturing, steam navigation, and domestic purposes respectively, as well as the quantity exported, and how far and to what extent such consumption and export might be expected to increase. They obtained statistics of the consumption of coal in the following fifteen industries:— Quantity of coal used for manufacturing and domestic purposes.

(*a.*) Mining and metallurgy. (*b.*) Clay and its manufactures. (*c.*) Glass. (*d.*) Brewing and Malting. (*e.*) Woollen and Worsted. (*f.*) Cotton manufacture. (*g.*) Silk. (*h.*) Flax, hemp, &c. (*i.*) Steam power and General Manufacture. (*j.*) Salt. (*k.*) Paper. (*l.*) Tanning. (*m.*) Railway locomotives. (*n.*) Gas. (*o.*) Waterworks.

* Report of the Royal Coal Commission [C. 435—2] Vol. III., 1871. Report of Committee E., Statistics of Production, Consumption, and Export of Coal.

Manner in which the consumption of coal was ascertained.

**10.** The information was ascertained by issuing circulars to mines, ironworks, waterworks, gasworks, railways, &c., and to all manufacturers using large quantities of coal in the United Kingdom. The circulars were sent out during the three years 1866, 1869, and 1870, and the Report was published in 1871, after the inquiry had occupied altogether five years; about two-thirds of the works returned their circulars properly filled in, and the consumption of the remainder was estimated. The general result for 1869 was summed up as follows:—*

| | Tons. |
|---|---|
| For Iron manufacture | 32,446,606 |
| „ General manufactures, for steam power and other purposes | 25,327,213 |
| „ Metallurgies other than iron | 859,231 |
| „ Mines and collieries | 7,225,423 |
| „ Gas and waterworks | 7,811,980 |
| „ Steamships | 3,277,562 |
| „ Railways | 2,027,500 |
| „ Domestic consumption | 18,481,527 |
| „ Miscellaneous | 195,045 |
| Total quantity of coal used | 97,652,087 |
| „ Coal exported | 9,775,470 |
| Total quantity of coal raised | 107,427,557 |

**11.** As the total amount of coal consumed in this country in 1892 was 142,406,115 tons, or about 45 per cent. more than it was in 1869, it is evident that an inquiry similar to that of the Royal Coal Commission would now be a very heavy task indeed, and it is scarcely probable that the advantages likely to accrue from it would be commensurate with the amount of labour required.

Dr. Munro's evidence.

**12.** Dr. Munro told us in his evidence (Appendix I. p. 15), that the reason which influenced the Royal Commission on Mining Royalties in the desire to obtain this information was: "that in considering the effect of higher cost of production on "the coal trade, due to either higher wages or higher prices, in connexion with foreign "competition, it was thought desirable to draw a wide distinction between coal used "for manufacturing purposes, and coal used for domestic purposes; for instance, a "rise in wages, so far as concerns coal used for domestic purposes, would not affect the "cost of production in manufactures. It was, therefore, thought that it would be well, "so far as it might be practicable, to form an estimate year by year of the amount of "coal used for manufacturing and domestic purposes respectively, so that one might "be able to judge how far the movements in wages and prices in England tend to "affect the cost of production in our industries, either by restricting the amount of "coal used, or by leading to the adoption of other sources of motive power."

Proposed inquiry concerning coal consumption.

**13.** Estimates concerning some of the principal industries might be obtained in the manner proposed by Dr. Munro in his evidence, but we are scarcely convinced that they would have a very satisfactory result. Coal consumed in the following industries can probably be ascertained with approximate accuracy, and we recommend that the inquiry be undertaken so far as regards these uses, viz.:—

(*a.*) Iron manufacture—Pig-iron.
(*b.*) „ „ Wrought-iron.
(*c.*) „ „ Steel.
(*d.*) Gas manufacture.
(*e.*) Cotton manufacture.
(*f.*) Woollen „
(*g.*) Mining operations.
(*h.*) Railways.

Coal consumed in iron and steel making.

**14.** The amount of coal consumed in the production of pig-iron is already obtained very accurately every year, and so is the quantity of coal exported; the consumption of coal in the manufacture of wrought-iron and steel may be ascertained by circulars issued from the Home Office, as is done in the case of pig-iron.

Coal consumed in gas, cotton, and in other manufactures.

**15.** With reference to gas, cotton, and woollen manufactures, we think that advantage might be taken of the proposed statutory returns from factories, for we

* Report of the Royal Coal Commission, Committee E., p. iv.

understand that it is suggested that every factory should send in annually a return, stating the number of persons employed and the nature of the machinery at work. If the amount of coal consumed were added to this return, the necessary information would be secured with comparatively little trouble to the owners; and the return might also include the average price per ton of the coal for the year.

Coal consumed at mines.

**16.** The quantity of coal consumed at mines could without difficulty be stated upon the annual returns made to the Inspectors of Mines. In addition, and as a check upon the totals obtained in other ways, the owners of collieries might be asked to give figures showing the distribution of their coal as far as it is possible—say under the seven headings:—

i. For colliery consumption.
ii. For domestic consumption.
iii. For the manufacture of coke.
iv. For the manufacture of gas.
v. For other manufacturing purposes.
vi. For export.
vii. Distribution unknown.

A form for this purpose appears in Appendix II. (Table 16). Statutory powers will be necessary before this information can be obtained.

Coke manufacture.

**17.** We also recommend that an inquiry be made as to the number of coke ovens in the United Kingdom, and that statistics be obtained to show the quantity and value of coke produced annually, as there are no trustworthy returns of this industry available at present excepting those relating to the quantity exported. Statutory powers will be necessary before this information can be obtained.

The total consumption of coal for railway purposes could be ascertained by returns furnished to the Home Office by the individual companies, who already supply voluntarily statistics concerning the quantities conveyed upon their lines.

### 2. *Amount of Royalties and Wayleaves.*

Royalties and wayleaves.

**18.** The total amount paid by each mine for royalties and wayleaves during the year could be stated without difficulty upon the annual return furnished to the Inspector of Mines; but statutory powers will be required for obtaining this information. Appendix II. (Table 16).

### 3. *Average Prices of Coal at Pit's Mouth and at various Points of Consumption.*

Average price of coal.

**19.** The mine owner should be required by statute to state, upon the annual return, the average price of coal at the pit's mouth in the manner set forth by Table 16 (Appendix II.). Prices for the coal exported from sixteen of the principal shipping ports are already given in the "Mineral Statistics." Prices at various points of consumption inland might be ascertained by application to large coal merchants or consumers, and from the proposed returns furnished by factory owners (par. 15).

### 4. *Wages and Hours of Labour of Miners.*

Wages and hours of labour of miners.

**20.** The most accurate method of ascertaining the average earnings of the persons employed would be to obtain a return from every mine, showing the number of persons engaged in each class of work and the total amount paid in wages to that class during the year. Such a return, however, would involve an immense amount of labour on the part of mine owners, and we think that a sufficiently accurate estimate can be formed in another way. Two periods in the year should be chosen, one in summer and the other in winter, and for these two periods complete returns should be made out (either for a week, fortnight, or month, according to the local practice of paying wages), showing the number of persons employed, arranged according to age, sex, and employment, the number of shifts worked, and the total earnings. The average wages per shift would thus be known, and if the mine owner furnished at the end of the year a statement showing the actual number of shifts worked by each class and the length of each shift, sufficient data would exist for calculating the yearly earnings and the total number of hours worked. Appendix II. (Tables 17 and 18). Statutory powers will be necessary for obtaining this information.

### 5. *Imports and Exports of Minerals and Metals.*

Imports and exports.

**21.** Particulars of imports and exports are already given in sufficient detail; they are specially prepared by the Board of Customs for the annual volume of "Mineral Statistics."

### 6. *Comparison of the Mining Industry of the United Kingdom with that of Foreign Countries.*

Comparison with Foreign countries.

**22.** Figures given in the official reports of many Foreign countries will be quite sufficient for a basis of comparison, and in other cases it will not be difficult to obtain statistics by means of forms handed to the proper authorities through Her Majesty's representatives abroad. The main headings under which information is desirable, are:—

(1.) Number of persons employed, classed according to their occupation above and below ground, and according to colour, sex, and age.

(2.) Produce of the mines and other mineral workings.

(3.) Value of the mining produce at the mines or other mineral workings, before the cost of freight or carriage has been incurred.

Uniformity of standards.

**23.** In order to institute proper comparisons between the statistics of different countries, it will be necessary to secure uniformity as regards the condition in which the ore is weighed and valued; for instance, if the figures, as in the case of British lead ore, represent the quantity and value of the mineral in its dressed condition, other countries should be asked, as far as possible, to state their quantities and values in the same way. For purposes of comparison, it will likewise be necessary to reduce all weights and values to a uniform standard. Dr. Munro in his evidence before the Committee on this point, expressed his opinion that it would be desirable to adopt the metric ton as the standard of weight, and we agree with him in considering this plan as being the most convenient; values should be given in English money.

## 2. Official Mining Publications and Returns.

Official publications.

**24.** We recommend that the statistics relating to mines and minerals should appear annually in the following separate publications, which are arranged in the proposed order of issue:—

1. Early return of fatal accidents.
2. Summaries of Statistics relating to Mines and Minerals.
3. List of plans of abandoned mines.
4. Lists of mines and quarries at work.
5. Separate Reports of the Inspectors of Mines.
6. Mineral Statistics of the United Kingdom.
7. General Report on the Mining Industry of the United Kingdom.

### 1. *Early Return of Fatal Accidents.*

Early return of accidents.

**25.** As the value of statistics is enhanced by early publication, we advise that a list of all fatal accidents, arranged according to causes, be issued immediately after the end of each year. For this purpose it is desirable that the Inspectors should be instructed to close their annual lists on the 31st December, and to include in the following year's return any deaths occurring subsequently to that date, although the injury, resulting in death, may have been inflicted before it. The returns of accidents should be furnished by the Inspectors to the Home Office not later than the 5th January each year. This recommendation has already been sanctioned and carried into effect for 1893 (B 14643/9).

### 2. *Lists of Mines and Quarries at work.*

Lists of mines and quarries.

**26.** Inconvenience must necessarily be felt by the public in consulting the list of mines as now published by the Home Office, in consequence of great want of uniformity in the nature of the information given and in its arrangement. We consider that the list of mines in each Inspector's district should, after division into counties, be arranged with the names of the mines in alphabetical order in the first column, as

recommended by the Secretary of State in his letter of 19th March 1889 (B 5745 11). We are strongly of opinion that this recommendation should be made a Departmental Order. The column showing the number of persons employed, which is inserted by some of the Inspectors, is very useful for reference; it also serves to afford an idea of the importance of each mine, and we recommend that this information should be given for all the districts. It naturally follows that the list of quarries should be prepared in the same way.

Suitable forms of headings for these lists are given in Appendix II. (Tables 14 and 15).

### 3. *List of Plans of Abandoned Mines.*

List of plans.

We do not suggest any change in the form in which this list is now published.

### 4. *Summaries of Mining Statistics.*

Summaries of Mining Statistics.

**27.** The Summaries for 1893 which were prepared in accordance with a recommendation made by this Committee, and sanctioned officially (B 14643/11), consist of two parts. Part I. contains the statistics for the year, and Part II. gives corresponding figures for the previous twenty years. We recommend that in future Part I. be compiled in the Mineral Statistics Branch of the Home Office, from figures furnished by the Inspectors of Mines, and published separately as early as possible, and that Part II. be incorporated with the General Report. (Par. 36.)

We considered that in order to facilitate reference to the tables by the public, it was desirable to group them according to subjects instead of Acts of Parliament. The reader now has all the data relating to persons employed, accidents, or death-rates under his eye at one time instead of having to turn to different pages.

Enumeration of persons employed.

**28.** We recommend that the numbers of persons employed be ascertained in the manner proposed in the case of wages, &c. (par. 20), at two periods of the year, say during one week, fortnight, or month in summer and one week, fortnight, or month in winter, to be determined by the Secretary of State, distinguishing between those employed above and below ground; the average should be taken to represent the number employed during the year. This method of enumeration is proposed on account of the different interpretations which have been given of the words of the Acts "persons ordinarily employed."

Persons employed above ground.

**29.** We have thought it desirable to recommend discontinuing the practice of separating the persons employed above ground at mines under the Coal Mines Act into the two classes, viz.:—

(1.) Persons employed at the mine above ground, including those on sidings at the pit;

(2.) Persons employed on private branch railways and tramways, and in washing and coking coal on premises adjacent to or belonging to the mine.

The subdivision is one which appears to serve no useful purpose, and, indeed, has tended to make the statistics confusing during the few years in which the figures have been given separately. This recommendation has already been sanctioned and carried into effect. (B 14643/11.)

Deaths-rates per 1,000 persons employed.

**30.** We have discussed at some length the question of the best means of stating the ratio of deaths from accidents to the number of persons employed, and have concluded that the method of calculating death-rates per 1,000 persons employed is the most suitable for purposes of comparison with death-rates from disease and death-rates from accidents as given in other countries. It is obvious that the system of calculating the death-rate of the underground men separately is the only true means of ascertaining the risk incidental to their employment as miners. Hitherto these ratios have been based upon totals which include the persons employed both above and below ground, and they must have conveyed a misleading impression. Appendix II. (Table 5).

Death-rates per 1,000,000 tons of mineral.

We have substituted the method of stating the death-rate per 1,000,000 tons of mineral raised for the old plan of calculating the number of tons raised for each death by accident, as we consider the former plan far clearer for purposes of comparison. Appendix II. (Table 5).

Tables of non-fatal accidents.

**31.** We further recommend that particulars of non-fatal accidents should be given for all the districts. A table showing the non-fatal accidents arranged according to

causes similar to Table 8 (Appendix II.) is proposed, and it would be well to introduce a second table showing the nature of the injury and the period of disablement in order to give an idea of the gravity of the casualties. (Appendix II., Table 12.) The first part of this table is drawn up in the manner adopted by the Chief Inspector of Factories.

Definition of non-fatal accidents.

**32.** It is very desirable that the meaning of the words "serious personal injury" used in section 35 of the Coal Mines Regulation Act of 1887, and in section 11 of the Metalliferous Mines Regulation Act of 1872 should be clearly defined; and any definition which may be proposed should agree with that adopted for other industries. If this is done, the non-fatal accidents at mines will be comparable with the non-fatal accidents among persons engaged at factories and workshops, or on railways, or in shipping.

We consider that—

i. Any accident caused by an explosion of gas, or of any explosive, or of any steam boiler, and

ii. Any accident causing the fracture of any bone, should be reported immediately; and that—

iii. Any accident which has occasioned an absence from work of more than seven days should be reported within eight days after its occurrence. Appendix II. (Table 20).

### 5. *Separate Reports of the Inspectors of Mines.*

Publication of Inspectors' Reports.

**33.** In order to hasten the publication of the separate Reports of the Inspectors of Mines and the proposed General Report, we are of opinion that the Inspectors should send in the MSS. of their reports at an earlier date than usual, not later than the 15th February each year, and before their annual meeting; this might in future be held during the last week of February instead of the third week as at present.

Uniformity in statistical tables.

**34.** For the purpose of facilitating reference to the individual reports, it is advisable that there should be more uniformity in the method of showing certain statistics than exists at present. Where general tables appear in the separate volume of the "Summaries," care should be taken that any details concerning them in the individual reports should be shown in precisely the same tabular form.

The information to which we refer is as follows:—

(1.) Number of persons employed.
(2.) Quantities of minerals raised.
(3.) Fatal accidents and deaths.
(4.) Hours of shifts during which accidents happened.
(5.) Ratios of deaths to number of persons employed and to tons of minerals wrought.
(6.) Prosecutions. Table 13, Appendix II., is a form which might be conveniently adopted by all the Inspectors, for showing the results of prosecutions in their districts.

It is also desirable that the particulars of non-fatal accidents set forth in Table 12, Appendix II., should appear in each individual report.

### 6. *Mineral Statistics of the United Kingdom.*

"Mineral Statistics."

**35.** We are of opinion that the volume of "Mineral Statistics" should be continued in its present form (par. 5), with any minor alterations or additions which may from time to time appear desirable, and that the book should be rendered more complete by publishing the output of all important mines and quarries. Most of the returns from mines under the Metalliferous Mines Act have been published in detail for many years; but statutory powers will be requisite before the returns of quantities of mineral raised from mines under the Coal Mines Act can be treated in the same manner. The Quarries Act, which comes into force on the 1st January next, will enable the Inspectors of Mines to obtain returns of the quantities of minerals produced from open workings which are more than twenty feet deep; there still remain certain shallow workings for ironstone, fuller's earth, coprolites, &c. and brine pits, which will be outside the provisions of this Act. It is therefore desirable that the Secretary of State should have power to call for returns from such workings.

### 7. *General Report on the Mining Industry.*

Annual General Report on mining industry.

**36.** One of the principal defects of the present system, under which the statistical returns and reports of the Inspectors appear, is that there is no general statement with respect to the mining industry as a whole. In other departments, such as those which deal with Factories, Education, and Local Government, a general report is presented annually to Parliament; but no comprehensive idea of the condition of the Mining Industry can be obtained without searching through the thirteen separate Reports of the Inspectors and the different volumes of Statistical Returns.

The Committee are therefore of opinion that a general Report on the Mining Industry of Great Britain and Ireland, as suggested by the Royal Commission on Mining Royalties, should be prepared annually, and that it should be based upon the separate Reports of the Inspectors of Mines and upon the "Mineral Statistics."

It should contain tabulated statements which will enable comparisons to be made between the different mining fields, counties or districts, as regards persons employed, output, accidents, death-rates from accidents, royalties, wayleaves, hours of labour, wages, consumption and distribution. These comparisons should be illustrated as far as possibly by diagrams. The mode of occurrence of the different minerals should be briefly described, and other matters of general interest relating to mining might be added.

The Report should also institute a comparison between the Mining Industry of the United Kingdom and that of Foreign countries as suggested by the Royal Commission. (Pars. 8 and 22.)

**37.** We are of opinion that such a volume could not well be compiled by persons not thoroughly familiar with the Inspectors' Reports and the condition of the mining industry generally; we therefore recommend that one of the Inspectors of Mines should be charged with the preparation of the book.

If this suggestion is carried into effect, the whole of the statistics of mines and minerals should be placed under the supervision of this Editing Inspector, subject only to the authority of the Home Office. Probably this extra duty would require additional assistance to be given to the Inspector selected, during the period of the year when he would be occupied with statistical work.

### 3. Mineral Statistics Branch of the Home Office.

Mineral Statistics Branch of the Home Office.

**38.** The staff of the Mineral Statistics Branch which is attached to the Domestic Department of the Home Office consists at present of two officers, viz, the Clerk of Mineral Statistics and one second division clerk.

The principal duties of the branch are as follows:—

1. Compiling the annual volume of "Mineral Statistics" of the United Kingdom and British Colonies (par. 5).
2. Preparing the annual list of Record Plans of Abandoned Mines (par. 7).
3. Arranging for the printing of the thirteen annual Reports of Her Majesty's Inspectors of Mines, and the official list of mines at work (pars. 3 and 6).
4. Tabulating the monthly statistical returns relating to accidents, prosecutions, &c. furnished by the Mines Inspectors to the Home Office, for the purposes of the "Labour Gazette."
5. Preparing of any statistical matter relating to mines which may be required for Parliamentary or official purposes.
6. Preparing quarterly returns for the Registrar General showing the average prices of coal in the London market.
7. Issuing authorisations to persons applying to be examined for certificates of competency as mine managers, forwarding certificates to successful candidates, &c.

Increase of staff necessary.

The collection and compilation of the statistical information necessary for preparing the General Report will cause a considerable amount of additional responsibility and labour to be thrown upon the staff of the Mineral Statistics Branch, and, agreeing with the suggestion of the Royal Commission, we recommend that this branch should be extended so as to be able to cope with its new and increasing duties.

### Conclusion.

**39.** We have consulted certain Members of Parliament interested in mining, the Inspectors of Mines, the representatives of various Mining Associations, the Editors of

leading mining newspapers, and other persons intimately connected with mining, upon the best method of obtaining the information desired; many valuable suggestions have been made to us, and have been adopted in framing the proposed new forms. (Appendix II.) We desire to record our obligations to those who have thus assisted the Committee by their advice.

**40.** Our recommendations, many of which are merely repetitions of those of the Royal Commission upon Mining Royalties, may be summed up briefly as follows:—

| | Page. | Paragraph. |
|---|---|---|
| *1. Early Return of Fatal Accidents.* | | |
| The publication of an early return of fatal accidents | 10 | 25 |
| *2. Lists of Mines and Quarries.* | | |
| Uniformity of arrangement, and the addition of information concerning the numbers of persons employed at each mine or quarry | 10 | 26 |
| *3. List of Record Plans of Abandoned Mines.* | | |
| No alteration suggested | 11 | — |
| *4. Summaries of Statistics.* | | |
| Arrangement of the Tables according to subjects instead of according to Acts of Parliament | 11 | 27 |
| Death-rates to be calculated per 1,000 persons employed, and separately for underground and above ground workers; and also per 1,000,000 tons of mineral raised | 11 | 30 |
| The addition of statistics relating to non-fatal accidents | 11 | 31 |
| Definition of non-fatal accidents | 12 | 32 |
| *5. Annual Reports of Inspectors of Mines.* | | |
| Earlier publication | 12 | 33 |
| Uniformity in presenting certain statistics | 12 | 34 |
| Uniformity in the arrangement of particulars relating to prosecutions for offences | 12 | 34 |
| *6. Mineral Statitics* | | |
| Details of the output of individual mines to be given | 12 | 35 |
| *7. General Annual Report.* | | |
| The publication of a General Annual Report, to be compiled by the Mineral Statistics Branch under the superintendence of an Editing Inspector | 13 | 36 |
| *8. Mineral Statistics Branch of the Home Office.* | | |
| Increase of staff | 13 | 38 |

Finally, we beg leave to point out that our recommendations under the headings 1 to 5 inclusive can be carried out without additional statutory powers, if you should think fit to issue the necessary instructions to the Inspectors. Our recommendations under headings 6 and 7 cannot be carried into effect without further statutory powers, as pointed out in paragraphs 15, 16, 17, 18, 19, 20 and 35; but, nevertheless, a short General Report dealing with facts and figures already obtainable could be compiled annually, and if the suggestion meets with your approval, the preparation of the work might be commenced at once.

We have the honour to be,
Sir,
Your obedient Servants,

(Signed) C. LE NEVE FOSTER, *Chairman.*
W. A. HUNTER.
W. BEATTIE SCOTT.

JAMES B. JORDAN, *Secretary.*

# APPENDIX I.

## MINUTES OF EVIDENCE

TAKEN BEFORE THE

## DEPARTMENTAL COMMITTEE ON MINING AND MINERAL STATISTICS AT THE HOME OFFICE.

**Thursday, April 12th, 1894.**

PRESENT:

DR. C. LE NEVE FOSTER, F.R.S., H.M. INSPECTOR OF MINES (CHAIRMAN).

MR. W. A. HUNTER, M.P. | MR. W. BEATTIE SCOTT, H.M. Inspector of Mines.

MR. JAMES B. JORDAN (Secretary).

J. E. C. MUNRO examined.

1. (*Chairman.*) You are one of the members of the Royal Commission appointed to inquire into the subject of mining royalties?—Yes.

2. We should like a little information with regard to the recommendations that you make concerning mining statistics. I see the first point that the Commission recommend is that information should be obtained regarding the quantity of coal used for manufacturing purposes and for domestic purposes respectively; I should like to know, if you can tell us, what the reasons are which influenced your Commission in wishing to know separately these two totals?—Our general idea on the subject was this, that in considering the effect of higher cost of production on the coal trade, due to either higher wages or higher prices, in connexion with foreign competition, it was thought desirable to draw a wide distinction between coal used for manufacturing purposes and coal used for domestic purposes. For instance, a rise in wages, so far as concerns coal used for domestic purposes, would not affect the cost of production in manufactures. It was, therefore, thought that it would be well, so far as it might be practicable, to form an estimate year by year of the amount of coal used for manufacturing and domestic purposes respectively, so that one might be able to judge how far the movements in wages and prices in England tend to affect the cost of production in our industries, either by restricting the amount of coal used or by leading to the adoption of other sources of motive power.

3. Would not any conclusions derived from that be vitiated by improvements in the modes of burning coal. Suppose, for instance, that a manufacturer is using some improved form of grate or a better boiler, and is thus getting more work out of his coal. Would not that vitiate your conclusions?—It would not vitiate the figures collected, but it would be an element to be taken into account in coming to general conclusions on the whole question.

4. You might be practically doing much more work in horse power and measurement whilst using a smaller quantity of coal?—You might.

5. Taking that fact into consideration, and knowing that it would be difficult to arrive at accurate estimates, is it worth while going to the trouble and expense of making these calculations?—The Commission unanimously thought it was.

6. They were unanimous on that point?—Yes.

6a. No doubt you have looked at the report of the Royal Coal Commission published in 1871?—Not recently.

7. In 1866 that Commission appointed a committee, consisting of Sir Roderick Murchison and Mr. Hunt, to inquire into the quantity of coal then consumed in the various branches of manufacture, in steam navigation, and for domestic purposes, as well as the quantity exported, and whether or to what extent such consumption and export might be expected to increase?—I do not think I have seen that paper recently.

8. That Committee obtained returns as to the consumption in the following among other industries, viz., mining and metallurgy, glass, brewing and malting, cotton and woollen manufactures, salt, paper-making, railway locomotives, gas and water works, &c. They obtained that statistical information by issuing circulars to all mines, waterworks, gasworks, railways, &c., indeed to all manufacturers using coal in any large quantity throughout the United Kingdom. The issue of circulars in order to obtain that information extended over a period of three years—1866, 1869, and 1870—and Mr. Jordan estimates that fully a hundred thousand circulars were sent out to obtain it. About two-thirds of them came back fairly complete and the remaining third were estimated in each case. That inquiry occupied a period of five years, and their report was published in 1871. On page 4 you will find a summary of what they say, and they estimate that more than one-sixth of the total output of coal was for domestic purposes. The domestic consumption was ascertained by difference.

9. (*Mr. Hunter.*) Perhaps I might interject a question here. Do you remember whether that report was before your Commission?—I do not think it was.

10. Practically it shows that about one-sixth of the total output in these years was estimated to be for domestic purposes?—So I understand.

11. (*Mr. Scott.*) We have been thinking of the practical difficulties of getting all the information accurately?—There must be some difficulty.

12. (*Chairman.*) It took three years to collect that information. You may naturally say that that was a more detailed return than we now require; but in any case would we not have to send out a circular to all persons largely using coal?—I have not thought out any particular scheme, nor was I aware that the point would be raised to-day; but I think the question could, in the first instance, be approached without asking for returns from the manufacturer or consumer. I think the coal owner could be asked to make a return not only of the quantity of coal produced and exported, but of the quantity, so far as he knows, that is used for manufacturing purposes, the quantity used for domestic purposes, as well as the quantity that he is not able to assign to either manufacturing or domestic purposes. Some mines raise coal for domestic purposes alone, and some produce for manufacturing purposes alone. Then

there are mine owners whose coal may be used for either or both purposes. A great deal of very useful information on these points could doubtless be obtained from the coal owners themselves. Then I think that this information might be supplemented by inquiries in other directions, without at all going into the elaborate details asked for by the Committee of 1866. For instance, there would not be much difficulty in ascertaining the total amount of coal used for the manufacture of gas, and that would be material. I do not think there would be much difficulty in ascertaining the total amount of coal used in furnaces; and probably, so far as manufactures are concerned, it would be more important to ascertain the amount used year by year for iron than for any other industry, as coal is a more important factor in the manufacture of iron than it is in the manufacture of cotton or wollen goods. The cost of coal in a spinning factory is only a small portion of the total cost of the article turned out, whereas the cost of coal per ton of iron produced is most material. It is probably rather more from this point of view than from any other that the recommendation of the Commission has been made. I should attach more importance to ascertaining the amount of coal used in the iron industry than in all other trades. If that alone could be ascertained, I think it would be valuable.

13. (*Chairman.*) Are you aware that we do obtain the total quantity of coal used every year in the manufacture of pig-iron?—Yes, I know that.

14. Do you mean that you would wish us to go further, and get the quantity employed in making wrought-iron from pig-iron, and in making steel?—That would be useful undoubtedly, if it could be obtained without great difficulty. I take it that if the number of firms who are engaged in these industries is not so large as to make the inquiry too long and too difficult, it might be desirable. I might here make another remark. Take, for instance, the cotton trade—one of the great industries. If you were to ascertain the amount of coal used in a spinning factory, say, in Oldham or anywhere else, in the course of a year, and the number of spindles driven by that coal, then, knowing the total number of spindles, you could form a fairly accurate idea—sufficient for all practical purposes—as to the total amount of coal used in all the cotton factories in Lancashire.

15. You would take an average factory?—Yes. You might take one typical factory, and ascertain the number of spindles in it.

16. That is one of the recommendations of the Factory Department—to ascertain the number of spindles at work in the United Kingdom?—You already have that pretty accurately I think. In the woollen districts the same plan might be applied. The number of looms could be ascertained at a woollen factory in Yorkshire. Any one would give you the particulars as well as the amount of coal used per loom in a given factory in the course of the year, and then you could generalise as to the total amount of coal used.

17. (*Mr. Scott.*) We would require to find out the total number of spindles and looms in the industry?—I assume that to be known.

18. If we go to the cost and trouble of inquiring the total number of looms and spindles in the whole industry, we might as well ask at once what is the total amount of coal used?—You would not have to make a detailed inquiry as to the total number of spindles, as the trade authorities could give you that. It is known. Then take the linen industry in the north of Ireland—the only important trade in that country. The Flax Association of Belfast would give you the total number of looms and spindles going each year. They have been published by Mr. Grinisham, the Registrar-General in Ireland, in the papers he read before the Dublin Statistical Society. They give the total number of power-looms and spindles each year for the last 10 years. I am not suggesting that you should embark on a separate inquiry as to the number of spindles, &c., but where that is known either officially or non-officially, you might by a simple method of calculation, and by making inquiries in a particular factory, obtain for all practical purposes the information that is required.

19. (*Mr. Hunter.*) Then I gather that you think that, having regard to the use that would be made of this information, it might to a very large extent be made up from estimates? Yes, I think with regard to the smaller industries it could be made on estimates, and that such estimates might be as accurate as if you attempted to issue a large number of circulars, and then found only a few returned.

20. (*Chairman.*) Would you estimate the domestic consumption by difference?—Yes, I think you would have to do that.

21. Would it not then be necessary to go to all the leading industries to inquire, in order to be enabled to calculate the difference?—You do not want so much to get at the domestic consumption as the manufacturing consumption, and that in the leading industries.

22. The domestic consumption you do not care so much about?—It is not so material; but if you ascertain the total amount of coal used in the leading industries, you might calculate that a reasonable proportion of the remainder goes for domestic consumption.

23. (*Mr. Scott.*) You think that estimates would be sufficient for the purposes you had in view when you discussed this in the Commission?—Yes, largely, but the department might, as the work proceeds, see new directions in which inquiries might be usefully made.

24. If the question of price is to be taken into account on its bearing on wages, we must find out in some way what is the price of domestic coal, which is higher in price as a rule than manufacturing coal?—I did not intend to suggest that it would be necessary to distinguish the difference in price between manufacturing and domestic coal, except in so far as the coal-owners could give accurate information on the point. I suggested the price of coal as an element of cost, and as therefore a material point in the question of production. If you could compare the movement in prices and in the production of coal it would be interesting to see how far rise in price tends to check production in manufacture. I quite admit that any preliminary inquiry on the subject would have to be tentative, and the results might have to be accepted with some qualifications. One would have to feel one's way in getting this information, but the coal-owners on the Commission certainly expressed their willingness to give the information.

25. (*Mr. Hunter.*) Then I think your suggestion is that we might get that information substantially from the coal-owners?—I think that probably in some districts you might very largely get it from them. You might find that in certain districts the coal produced was chiefly or almost entirely for domestic consumption.

26. (*Mr. Scott.*) One difficulty in getting the information from the coal-owners might be this, that they deal very largely with coal merchants, and they may hand over to these merchants large quantities of coal per annum without any knowledge of the purpose for which it is intended?—I think you would require to leave a column for the coal which they could not identify or designate as being either for manufacturing purposes or domestic consumption.

27. (*Mr. Hunter.*) Such a return would be able to give a certain amount of information, positive knowledge so far as it goes, and thus reduce the limits of error.

(*Chairman.*) No doubt it would do that.

(*Mr. Scott.*) The purpose of such coal as is sold direct to the consumer is known; but the purpose is not known when it is simply sold to the coal merchant, and we should almost have to follow up the supply to get all the facts.

(*Witness.*) I am not sure whether you now get the amount used year by year for the manufacture of gas. That could be got without much difficulty from the gas companies.

28. (*Chairman.*) Do you think they would give it voluntarily? You might perhaps require compulsory powers for some of these matters. At the present time, in order to avoid the increasing cost of coal, every effort is being made by the gas companies to use oils which they spray into the large gasometers for the purpose of enriching the gas, with the result that the production of a given amount of illumination as the gas leaves the gasometer does not require the use of as much coal as was required before, though it is an open question whether extra illumination from the oil reaches the consumer, some authorities saying it is dispersed on the way.

29. (*Chairman.*) In order to keep up their gas to the standard quality with less coal?—Yes, in order to use

a smaller quantity of coal, and it would be interesting from that point of view to see how far the consumption of coal in proportion to the production of gas is decreasing.

30. Would it not be necessary also to ascertain the quantity of oil used?—It would probably be enough to learn whether they are producing the best illuminating gas with less coal.

31. (*Mr. Hunter.*) Are you aware that in Scotland, with the exception of two insignificant cases, the whole of the manufacture of gas is in the hands of the Town Councils, and the information could therefore no doubt be got from these bodies. The same thing is now done in many towns in England?—Yes.

(*Chairman.*) Where I live the gas manufacture is in the hands of the town.

(*Witness.*) Correct information could be obtained with reference to gas manufacture and the iron industry. Perhaps it might also be got with regard to cotton and woollen manufacture; but iron is the most important of all.

(*Chairman.*) We have got the figures so far as pig-iron is concerned, but you want to extend that to wrought iron and steel?—Yes, if possible.

(*Mr. Scott.*) Upon that point it would probably be well to ask Mr. Brough, the Secretary of the Iron and Steel Institute, to come and give us some information.

(*Chairman.*) He would come at any time.

(*Witness.*) It was not contemplated by the Royal Commission that an inquiry, similar to the inquiry of 1866, should be undertaken by this department.

32. (*Chairman.*) We are scarcely expected to prophesy, as in the case of the former committee, to what extent such consumption and export may be expected to increase?—No, but to ascertain the facts from year to year.

33. (*Mr. Hunter.*) It would meet the views which the Royal Commission entertain if a return, largely a matter of estimate, were obtained, which would be approximately accurate?—That would be quite sufficient.

(*Chairman.*) That is a totally different thing from our reading of the recommendation.

(*Mr. Scott.*) We were considering how it could be done. In my district many small mine owners who do not keep a manager do not keep careful records, but simply regard as profit all that is left after payment of their weekly expenses; yet their united output must amount to something like a million tons per annum. There may be other districts with small mines of the same character where the difficulty in arriving at the exact total output would be enormous.

34. (*Mr. Hunter.*) Is there anything further you would like to say with regard to any other point in your memorandum?—I shall be glad to answer any question you may wish to ask me.

35. (*Chairman.*) About the price of coal—would you suggest that that should be given by the colliery owners?—I think it would be almost more desirable if the colliery owner could furnish you with the total number of tons he sells in the year and the total price he realises, then you could divide the one by the other and get the average price.

36. (*Chairman.*) As I have said, we get the quantity now, but you would like the value to be given as well?—It would probably be more satisfactory in working out your report if you had not only the quantity but also the total amount in money, not for publication in the case of individual collieries, but for the sake of working out generally the average price.

37. Every man in my district gives me the value. In many cases they say it is confidential and not to be published separately but simply for the purpose of reckoning up the total. The details are therefore kept confidential?—It is rather a nice question if you are dealing with collieries of different kinds or in different parts of the same district and you ascertain the average price at each, to settle the principle on which you are to ascertain the average price of the whole district.

38. (*Mr. Hunter.*) An average of averages is not an average?—True. The only satisfactory way of arriving at it would be to add together the total number of tons raised, and then take the total price realised and divide the one by the other, but of course unless you get the total price as well as the total quantities you would not be able to do that.

39. You are in favour of statutory powers to get the total values as well as the quantity?—Yes.

(*Chairman.*) The next question is that of wages and hours of labour.

40. (*Mr. Hunter.*) Would you be satisfied with a return for two weeks in the year, one week being taken as the season of maximum activity and the other as that of minimum activity, getting for these two periods absolutely accurate returns of the number of persons employed above ground and under ground, above and below the age of 18, their sex, and the total earnings of each class during these weeks?—I do not think that would be altogether satisfactory.

41. Considering the enormous burden which would be thrown on the coal-owners by requiring them to give that information for the whole year, do not you think that in the first instance we might be satisfied with typical weeks?—I think the better principle is to approach the wages question rather from this point of view, viz., ascertain the total number of shifts worked in the year and the total amount of wages paid in the year. These two returns would not be burdensome on the mine owner, and they would enable you to get at the rate per shift.

42. You are no doubt aware that in Germany these wages returns are obligatory for the purposes of insurance?—I know they are.

43. And it involves no extra trouble there to obtain these returns, but in this country where there is no record of wages kept for the purposes of insurance it might involve a serious amount of trouble on the part of the owners of mines to furnish the information?—I do not think there would be much difficulty on the part of the mine owner in saying how much he pays in wages in the year.

44. (*Chairman.*) Then you get men and women, boys and girls, all together?—Undoubtedly; how far the colliery owner could, without much difficulty, give you the wages of the different classes, I do not know; perhaps Sir William Lewis could speak as to that. If you get the total amount of wages paid in the year and the number of shifts worked, that would be satisfactory so far as it goes as a basis for calculation.

45. (*Mr. Hunter.*) It would be valuable in ascertaining the cost of production per ton, but not for learning the average earnings of the employed which vary considerably?—I assume that an endeavour would be made if possible to separate the different classes.

46. That would involve a very complicated system of book-keeping and would impose upon the mine owners that which at present is entirely at their option. What I was suggesting is that if we had absolutely accurate figures for one week in the height of the season and one week in the slackest season, then after two or three years we should find whether there was uniformity or anything like uniformity in it. Although that would not give us the year's earnings, it would give such an amount of information as we might easily ask from the employers, whereas if we ask detailed information with regard to the total annual earnings of each class of workers, so as to ascertain exactly what they do earn, there might be considerable opposition to giving all that information?—I can only say that we discussed miners' wages more than once before the Commission, and no suggestion was made by any of the coal owners that there would be any difficulty in giving the information for the different classes.

47. (*Mr. Hunter.*) Perhaps those members of the Commission were large owners who keep accurate books for their own use and information?

(*Chairman.*) Perhaps the witness would suggest that it would be better for the small owners if they too did a little more book-keeping.

48. (*Mr. Scott.*) The difficulty of getting the number of shifts for different collieries is enormous. In some cases the whole of the workings are let out to a sub-contractor who gets what labour he wants. The owner may know nothing about the amount paid to the men and how long they work?—Upon a question of that kind it might be desirable to consult some of the coal owners in different districts. The principles which suit one district might not apply to another.

(*Mr. Scott.*) There would be immense differences in different districts where sub-contracting goes on.

(*Chairman.*) It is a good thing that the owners should know exactly the number of shifts worked. I mean for their own information in calculating cost.

(*Mr. Scott.*) The good ones do know, but many of the small and poor ones do not know anything about it.

49. (*Chairman.*) About royalties and wayleaves. Would it be sufficient if we ascertained that once for all from the different mine owners, and then asked them to notify us of any changes that were made, or do you suggest that we should have an annual return from each mine owner on the subject?—I think we rather contemplated an annual return, which probably might be obtained more satisfactorily from the lessors than from the lessees.

50. Why not from the lessees. Would you throw the burden on the lessors to furnish the return annually?—Which ever is the easiest and most convenient way of getting the information. A lessor who owns a large coalfield worked by a number of lessees could himself make a return to cover the whole of them.

51. (*Mr. Hunter.*) Such as the Ecclesiastical Commissioners?—Yes, but on the other hand that would not meet the case of sub-letting. Suppose that A. lets to B. and B. to C., the return from A. would only show the royalty he receives from B., and you might have to inquire also of B. or C., in order to ascertain the royalties received by B. from C.

52. (*Chairman.*) Then you would have to go to the lessee ultimately?—Yes. We made a suggestion that both should be asked, so that one would be a check on the other.

53. (*Mr. Hunter.*) Would it not be sufficient in the case of royalties and wayleaves to have a return once in five years?—There would be very little, if any, alteration in the rate of the royalty in five years, but there might be substantial variations in the total amount received from year to year.

54. The total actually paid?—Yes; old mines might become worked out, and new ones might be opened up.

55. (*Chairman.*) That would mean an annual return?—Yes. the Commission had to approach it from the point of view of simply trying to find out what was the average of the royalties in the district, and the total number of tons raised in that district. We did not contemplate going to every lessee in the kingdom, and asking what royalty he paid. I understand that in Scotland the returns are accurate, and that the total amount every year is known.

56. To whom is that made known?—It is officially made known, as set forth in the paragraph of the report. Mining royalties returns are under 17 & 18 Vict., chap. 91, made to the county assessors, and we accept that as accurate.

57. Would you suggest that that statute should be applied to England and Wales as well as Scotland?—We contemplated a similar power being applied.

58. Returns would be made to the county assessors, and not to the Home Office, or the Inspectors of Mines?—We rather contemplated the information being given to the Home Office.

59. Upon the annual return which states the amount of coal produced?—Yes.

60. (*Mr. Scott.*) Take the case of Lord Dudley, who works his own mines. In the books he may or may not have a royalty charged against the collieries to the estate, but we do not know?—Such a case might have to be left out or separately treated. If you asked him how much he charged the estate for royalty, that would be raising rather a controversial point. You might perhaps get a return of the amount of coal which landowners work themselves.

61. There is the case of not only Earl Dudley, but also the Marquis of Londonderry and Lord Durham?—As a matter of fact, I believe, the royalties are charged in their books.

62. (*Chairman.*) Is there any other point?—Probably the inquiry as to the hours of labour would be a most important one.

(*Mr. Scott.*) There is no difficulty in ascertaining the nominal hours, but when you come to ask the actual hours worked, it is very difficult indeed in some districts to ascertain the precise figures.

63. (*Chairman.*) Would you like the actual number of shifts worked per man to be put in?—Assuming for the moment that you can get the total number of shifts worked in the year, then if you can also get the number of workers, you could find out the number of shifts which each workman works in the year.

64–5. Classified according to ages, &c.?—Yes; but there arises a difficulty as to how you are to get the number of workers in the year. I am not sure what is the principle on which the figures are collected at the present time—the number on a given day, or the average.

66. It varies. One method we thought of adopting would be to do the same with regard to the persons employed as with regard to the wages, viz., to find out by an actual census the number of persons employed in this industry in a week in January, and a week in July, and the mean of these two might be taken as the number employed throughout the year?—I understand the difficulties in the way. If you got the total of the shifts in the year, and the total number of persons who work these shifts; though a man may be employed for only one shift, you can get the average number of shifts for each worker, and then, if you get the total wages, you could work out the total average wages. Of course another plan that might be suggested would be to try and get the average number of workers in a particular week; but suppose you merely took the number of workers for the week beginning on the 1st of January, that might differ very greatly from the average number of men employed throughout the year.

67. But if we took two weeks—one in the summer and the other in winter—not a holiday time, and took the mean of these two as the average for the year?—That undoubtedly would be a fair way of getting at it.

68. (*Mr. Scott.*) We are told the Poor-law statistics are got in that way, taking a slack week and a busy week?—It is well to state the methods on which the figures are calculated, and then any one using them is not misled.

(*Chairman.*) Yes, that is important.

(*Witness.*) I was trying to work out the average wages in the coal trade, and found that from 50 to 60 per cent. of the price received at the pit's mouth for coal goes to labour. Well, from your returns I took the total price at the pit's mouth of the coal raised for four or five years, year by year. I then took 55 per cent.—the mean between 50 and 60—as representing the total paid away in wages by the coal owners during the year. If I had had the total number of workers employed during the year, I could get at the average wages. I took the official figures as to the number employed, but I did not know whether they meant the number employed on a particular day on the average of a certain week or of the whole year. It would have helped me if I had known. I had to guard myself by stating that I did not know whether the number was an average for a week or the year or the total on one day. That is one method by which, short of getting returns from all the collieries, you could get at the total amount of the wage paid, and probably your department might utilize that method in order to check the conclusions arrived at by returns.

69. Is there anything else you would like to suggest to us?—It would be well if we could ascertain and state the amount of the retail price of coal in London, and other leading centres of consumption, as well as the prices wholesale and at the pit's mouth. I believe that people greatly under-rate the expense of the delivery of coals in London. It is said that there is more capital embarked in the distribution of coal than there is in coal mining itself.

70. (*Chairman.*) That is rather a startling statement; but no doubt there is a vast capital invested in carts, horses, railway trucks, premises, and the like?—I am a great believer in the use of diagrams for giving a clear, vivid view of the summaries and general effect of tabular returns. I think the French are far ahead of us in various departments in their use of diagrams for statistical purposes. In France that method is carried to great perfection. Diagrams are very useful in summarising periods of, say, 10 years, for the purposes of comparison.

70*a*. (*Chairman.*) That would be one of your recommendations—a more lavish use of diagrams?—I think it would economise space, and diagrams are easily understood.

71. We publish every year a list of fatal accidents, showing their proportion to the number of persons

employed. Which do you think is the best way of calculating the death-rate and making it plain to the average intellect; would you take the death as the unit, and say there were so many deaths to a certain number of persons employed, or would you put it that the death-rate is, say 1 decimal so-and-so per thousand of the workers engaged?—I think I should prefer the rate per thousand.

72. We, as a committee, certainly prefer it?—If any persons were going to make use of the statistics for comparative purposes, they would have to work out the number of deaths per hundred or per thousand persons employed or the rate per million tons raised. If I wanted especially to compare the returns with those issued abroad, I should require to reduce them to a common denominator.

73. You say in the report of the Commission that you would like some comparison to be instituted in these matters between the United Kingdom and foreign countries. Do you think it would be well for us in these tables for the sake of comparison to convert our tons into metric tons. I think, from a scientific point of view, that it would be desirable. One might say on the other hand that you might adopt the opposite principle and convert the metric tons into English tons, but that would involve more difficulty.

74. (*Chairman.*) It would certainly cause more trouble?—I do not know whether the difference would be so great as to be material.

75. Mr. Rothwell in his comparative statements has reduced our tons to metric tons?—I think on the whole it would be desirable that it should be done.

(*Mr. Scott.*) The metric system seems to me the best for calculation.

The examination of the witness then concluded.

17th April 1894.

Mr. Bennett H. Brough, Secretary to the Iron and Steel Institute, attended to give the Committee information relating to statistics of coal used in the production of iron and steel.

He stated that the Iron and Steel Institute being purely a scientific body, they collect no statistics, but that statistics of these industries are obtained and published by the British Iron Trade Association. The Secretary of this Association obtains the information partly by the issue of circular letters, and partly by estimation. The results are published from time to time in the "Iron and Coal Trades' Review."

Mr. Brough observed that the official volumes of "Mineral Statistics" in the library of the Iron and Steel Institute are frequently consulted by the members, and that statistics of the coke production, which these books do not show, are often asked for. He does not know for what purpose the information is sought.

He is of opinion that figures relating to the coke industry in this country should certainly be obtained and published annually.

Mr. Brough further stated that official returns of the quantity of iron and steel produced in Great Britain would be very valuable.

In France, statistics relating to iron and steel manufacture are obtained by the Comité des Forges, of 3, Rue Scribe, Paris, and the American Iron and Steel Association of Philadelphia, in their weekly "Bulletin" and Annual Report, publish statistics of these industries for the United States.

## APPENDIX II.

**The following headings are suggested for some of the Tables of the proposed Annual General Report on the Mining Industry.**

### TABLE 1.

### PERSONS EMPLOYED* AT ALL THE MINES† OF THE UNITED KINGDOM.

TOTAL NUMBER of MINES WORKED and of PERSONS EMPLOYED in all MINES in the UNITED KINGDOM, whether worked for COAL, ORES, STONE, or other MINERALS—but not including PERSONS EMPLOYED in QUARRIES.‡

| Total Number of Mines. | Under Ground. | Above Ground. (Including Persons employed in washing Minerals, in coking Coal, and on Private Branch Railways and Tramways on Premises adjacent to, and belonging to, the Mine.) | | Total Under Ground and Above Ground. |
|---|---|---|---|---|
| | Males. | Males. | Females. | |
| | | | | |

* The term "persons employed" denotes the number ordinarily employed and is the mean between two censuses, one taken in summer and the other in winter.

† The term "mine" includes workings below ground by artificial light for the purpose of searching for or proving or working minerals, irrespective of the nature of the minerals, but does not include excavations open to daylight, unless they are immediately connected with mines. The term also includes works, tramways, and sidings above ground, adjacent to and belonging to the mine.

‡ The term "quarry" includes every place (not being a mine) in which persons work in getting slate, stone, coprolites, or other minerals.

### TABLE 2.

### COAL MINES.—PERSONS EMPLOYED.

NUMBER of PERSONS EMPLOYED in and about COAL MINES* classified according to AGE, SEX, and COALFIELDS.

| Name of Coalfield or County. | Number of Mines. | Under Ground. | | | Above Ground. | | | | | | | | Total Under Ground and Above Ground. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Males. | | | Males. | | | | Females. | | | | |
| | | Ages, 12 to 16. | Ages, above 16. | Total Under Ground. | Ages, 12 to 13. | Ages, 13 to 16. | Ages, above 16. | Total. | Ages, 12 to 13. | Ages, 13 to 16. | Ages, above 16. | Total Above Ground. | |
| | | | | | | | | | | | | | |

* The term "Coal Mines" includes mines producing coal alone or coal together with other minerals such as ironstone, fireclay, &c.

### TABLE 3.

### COAL MINES.

PER-CENTAGES of the NUMBER of PERSONS of DIFFERENT AGES EMPLOYED in the several COALFIELDS.

| Name of Coalfield or County | Under Ground. | | | Above Ground. | | | | | | Total | Under ground and above ground. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Males. | | | Males. | | | Females. | | | | |
| | Ages, 12 to 16. | Ages, above 16. | Total. | Ages, 12 to 13. | Ages, 13 to 16. | Ages, above 16. | Ages, 12 to 13. | Ages, 13 to 16. | Ages, above 16. | | |
| | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | Per-centage. | |
| | | | | | | | | | | | |

### TABLE 4.

### COAL MINES.

QUANTITY RAISED, VALUE at PIT'S MOUTH, AVERAGE PRICE per TON, TOTAL PERSONS EMPLOYED, and OUTPUT per PERSON in the several COALFIELDS.

| Name of Coalfield or County. | Coal. | | | Ironstone, Fireclay, &c. produced from Coal Mines. | Persons employed. | Quantity raised per Person. |
|---|---|---|---|---|---|---|
| | Quantity raised. | Total Value at Pit's Mouth. | Average Price per Ton. | Quantity raised. | | |
| | Statute tons. | £ | s. d. | Statute tons. | | Tons. |
| | | | | | | |

## TABLE 5.

## COAL MINES.—FATAL ACCIDENTS.

NUMBER of ACCIDENTS and DEATHS during the YEAR, with the PROPORTION of DEATHS Under Ground and Above Ground to 1,000 Persons employed, and of all DEATHS to every MILLION TONS of MINERAL RAISED.

| Total Number of Accidents. | Total Number of Deaths from Accidents. | | | Death-rate from Accidents. | | | Number of Deaths per 1,000,000 Tons of Mineral raised. |
|---|---|---|---|---|---|---|---|
| | Under Ground. | Above Ground. | Total. | Per 1,000 Persons employed under Ground. | Per 1,000 Persons employed above Ground. | Per 1,000 Persons employed above and below Ground. Total. | |
| | | | | | | | |

## TABLE 6.

## COAL MINES.—FATAL ACCIDENTS.

NUMBER of ACCIDENTS and DEATHS therefrom during the YEAR showing the PROPORTION of DEATHS Under Ground and Above Ground to 1,000 Persons employed, and of all DEATHS to every 1,000,000 TONS of MINERAL RAISED; classified according to Coalfields.

| Name of Coalfield. or County. | Number of Accidents. | Number of Deaths. | | | Death-rate from Accidents per 1,000 Persons employed | | | Number of Deaths per 1,000,000 Tons raised. |
|---|---|---|---|---|---|---|---|---|
| | | Under Ground. | Above Ground. | Total. | Under Ground. | Above Ground. | Total. | |
| | | | | | | | | |

## TABLE 7.

## COAL MINES.—FATAL ACCIDENTS.

AGES and SEX of PERSONS KILLED.

| Ages. | Under Ground. | Above Ground. | | | Total under and above Ground. |
|---|---|---|---|---|---|
| | Males. | Males. | Females. | Total. | |
| Under 16 - - | | | | | |
| 16 to 20 - - | | | | | |
| 20 to 30 - - | | | | | |
| 30 to 60 - - | | | | | |
| Over 60 - - | | | | | |
| Total - - | | | | | |

## Table 8.

## COAL MINES.—FATAL ACCIDENTS.

### Causes of Fatal Accidents in the several Coalfields of the United Kingdom.

| Name of Coalfield or County. | UNDER GROUND. | | | | | | | | | | | | | | | | | | | | | | | ABOVE GROUND. | | | | | Gross Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Explosions of Fire-damp or Coal Dust. | Falls of Ground. | | | In Shafts. | | | | | | | | Miscellaneous. | | | | | | | | | | Total Under Ground. | | | | | | |
| | | Sides. | Roof. | Total Falls. | Overwinding. | Ropes and Chains breaking. | Whilst ascending or descending by Machinery. | Falling into Shaft from Surface. | Things falling from Surface. | Falling from part way down. | Things falling from part way down. | Miscellaneous. | Total in Shafts. | By Explosives. | Suffocation by natural Gases. | Irruptions of Water. | Falling into Water. | On Inclined and Engine Planes. | By Trams and Tubs. | By Machinery. | By Under Ground Fires. | Ropes and Chains breaking. | Miscellaneous. | Total Miscellaneous. | | By Machinery. | Boilers bursting. | Railways and Tramways. | Miscellaneous. | Total Above Ground. | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## Table 9.

## COAL MINES.—FATAL ACCIDENTS.

### Table showing Per-centage Proportion of the several Causes of Accidents to Total Fatal Accidents.

| Name of Coalfield or County. | UNDER GROUND. | | | | | | | | | | | | | | | | | | | | | | | ABOVE GROUND. | | | | | Gross Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Explosions of Fire-damp or Coal Dust. | Falls of Ground. | | | In Shafts. | | | | | | | | Miscellaneous. | | | | | | | | | | Total Under Ground. | | | | | | |
| | | Sides. | Roof. | Total Falls. | Overwinding. | Ropes and Chains breaking. | Whilst ascending or descending by Machinery. | Falling into Shaft from Surface. | Things falling from Surface. | Falling from part way down. | Things falling from part way down. | Miscellaneous. | Total in Shafts. | By Explosives. | Suffocation by natural Gases. | Irruptions of Water. | Falling into Water. | On Inclined and Engine Planes. | By Trams and Tubs. | By Machinery. | By Under Ground Fires. | Ropes and Chains breaking. | Miscellaneous. | Total Miscellaneous. | | By Machinery. | Boilers bursting. | Railways and Tramways. | Miscellaneous. | Total Above Ground. | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

## TABLE 10.

## COAL MINES.—FATAL ACCIDENTS.

### NATURE of EMPLOYMENT of PERSONS KILLED.

| Name of Coalfield or County. | Under Ground. | | Above Ground. | | Total. |
|---|---|---|---|---|---|
| | Excavating Coal, other Minerals, or Rock. | Other Occupations. | Picking, Screening, and Washing. | Other Occupations. | |
| | | | | | |

## TABLE 11.

## COAL MINES.

### COMPARISON of COALFIELDS as to MINERAL RAISED, VALUE, PERSONS EMPLOYED, and DEATHS from ACCIDENTS.

| Name of Coalfield or County. | Per-centage of Total Mineral raised. | Per-centage of Total Value. | Per-centage of Total Number of Persons employed. | Per-centage of Total Number of Deaths from Accident. |
|---|---|---|---|---|
| | | | | |

All the particulars shown in Tables 2, 3, 4, 6, 8, 9, 10, and 11 should be given for counties separately as well as for coalfields separately.

Tables similar to Nos. 2 to 11 may be prepared for iron ore or other minerals separately where practicable.

TABLE 12.

## PERSONS INJURED BY NON-FATAL ACCIDENTS.

NUMBER of PERSONS INJURED by NON-FATAL ACCIDENTS during the Year 189 .

| NUMBER AND NAME OF DISTRICTS. | Nature of Injury. | | | | | | | | | | | | Period of Disablement. | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Loss of right Hand or Arm. | Loss of left Hand or Arm. | Loss of part of Right Hand. | Loss of part of Left Hand. | Loss of any part of Leg or Foot. | Fracture of Limbs or Bones of Trunk. | Fracture of Hand or Foot. | Loss of Sight of one or both Eyes. | Injuries to Head and Face. | Burns or Scalds. | Lacerations, Contusions, and other Injuries not enumerated. | Total Number injured. | Less than one week. | Between one and two weeks. | Between two weeks and one month. | Between one and three months. | Between three months and six months. | More than six months. | Permanently disabled from following his ordinary Occupation. | Unknown. | Total Number injured. |
| 1. Scotland, East - - - | | | | | | | | | | | | | | | | | | | | | |
| 2. Scotland, West - - - | | | | | | | | | | | | | | | | | | | | | |
| 3. Newcastle - - - - | | | | | | | | | | | | | | | | | | | | | |
| 4. Durham - - - - | | | | | | | | | | | | | | | | | | | | | |
| 5. Yorkshire and Lincolnshire - | | | | | | | | | | | | | | | | | | | | | |
| 6. Manchester and Ireland - - | | | | | | | | | | | | | | | | | | | | | |
| 7. Liverpool - - - - | | | | | | | | | | | | | | | | | | | | | |
| 8. Midland - - - | | | | | | | | | | | | | | | | | | | | | |
| 9. North Wales, &c. - - - | | | | | | | | | | | | | | | | | | | | | |
| 10. Staffordshire, North - - - | | | | | | | | | | | | | | | | | | | | | |
| 11. Staffordshire, South - - - | | | | | | | | | | | | | | | | | | | | | |
| 12. South-Western - - - | | | | | | | | | | | | | | | | | | | | | |
| 13. South Wales - - - - | | | | | | | | | | | | | | | | | | | | | |
| Totals in 189 - - | | | | | | | | | | | | | | | | | | | | | |
| Totals in the preceding year - | | | | | | | | | | | | | | | | | | | | | |

## Table 13.

### PROSECUTIONS.

Name of District _____.

| Name of Mine. | Description of Offender. | Contravention. | Result of Trial. | Penalty. | Costs. |
|---|---|---|---|---|---|
| | | | | £ s. d. | £ s. d. |
| | | | | | |

## Table 14.

List of Mines, Owners, and Managers, under the Coal Mines Regulation Act, in the County of _____ District, for the Year 189 .

| Name of Mine. | Situation. | Owner and Postal Address. | Manager. | No. of Certificate. | Under-Manager. | No. and Class of Certificate. | Date of Signature of Special Rules. | Persons employed. | | Minerals worked. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Below Ground. | Above Ground. | |
| | | | | | | | | | | |

## Table 15.

List of Mines, Owners, and Agents under the Metalliferous Mines Regulation Act, in the County of _____ District, for the Year 189 .

| Name of Mine. | Situation. | Owner and Postal Address. | Agent. | Date of Signature of Special Rules. | Persons employed. | | Minerals worked. |
|---|---|---|---|---|---|---|---|
| | | | | | Below Ground. | Above Ground. | |
| | | | | | | | |

Table 15 should likewise be used for the List of Quarries, omitting the column "Below Ground."

## TABLE 16.

Form of Return for Mines under the Coal Mines Regulation Act.

### Minerals Raised. Distribution, Prices, Royalties and Wayleaves.

YEAR ending 31st DECEMBER 189 .

*Name and Situation of Mine* _____

*County* _____.

*Name of Owner (Company)* _____ . *Postal Address* _____.

### COAL RAISED.

| For Colliery Consumption. | | | For Domestic Consumption. | | For the Manufacture of Coke. | | For the Manufacture of Gas. | | For other Manufacturing Purposes. | | For Export. | | Distribution Unknown. | | Total Coal raised. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Boilers, Workshops, &c. | Average Price per Ton at Pit. | Workmen's Fire-coal. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. |
| Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* |
| | | | | | | | | | | | | | | | | | |

### OTHER MINERALS RAISED.

| IRONSTONE (RAW). | | FIRECLAY. | | OIL SHALE. | | OTHER MINERALS. | |
|---|---|---|---|---|---|---|---|
| Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. | Quantity. | Average Price per Ton at Pit. |
| Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* | Statute Tons. | *s. d.* |
| | | | | | | | |

### ROYALTIES, RENTS AND WAYLEAVES.

| COAL. | | | | IRONSTONE. | | | | FIRECLAY. | | | | OIL SHALE. | | | | OTHER MINERALS. viz.:— | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rate of Royalty or Rent. | Rate of Wayleave | Total Amount paid. | | Rate of Royalty or Rent. | Rate of Wayleave. | Total Amount paid. | | Rate of Royalty or Rent. | Rate of Wayleave. | Total Amount paid. | | Rate of Royalty or Rent. | Rate of Wayleave. | Total Amount paid. | | Rate of Royalty or Rent. | Rate of Wayleave. | Total Amount paid. | |
| | | Royalty or Rent. | Wayleave. | | | Royalty or Rent. | Wayleave. | | | Royalty or Rent. | Wayleave. | | | Royalty or Rent. | Wayleave. | | | Royalty or Rent. | Wayleave. |
| | | £ | £ | | | £ | £ | | | £ | £ | | | £ | £ | | | £ | £ |
| | | | | | | | | | | | | | | | | | | | |

## TABLE 17.

## WAGES RETURN.

*Name of Mine* _____.

*Situation of Mine* _____.

*County* _____.

*Name of Owner (Company)* _____.

*Postal Address* _____.

Return for the Week, Fortnight, or Month, ending _____ 189 .*

| UNDERGROUND. | | | | | | ABOVE GROUND. | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Persons employed in getting Coal, Ore, Stone, or other Minerals, or in Sinking, Driving, or Excavating | | Other Persons employed Underground (excluding Officials, such as Foremen, Overmen, and Deputies). | | | | Persons employed in Picking, Screening Washing, Coking, Conveying, &c. (excluding Officials). | | | | | | | | Skilled Mechanics (Carpenters, Smiths, Fitters, &c.). | | | |
| | | | | | | Males. | | | | Females | | | | | | | |
| | | Under 16 Years of Age. | | Above 16 Years of Age. | | Under 16 Years of Age. | | Above 16 Years of Age. | | Under 16 Years of Age. | | Above 16 Years of Age. | | Under 16 Years of Age. | | Above 16 Years of Age. | |
| Number of Persons. | Net Earnings.† | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. | Number of Persons. | Net Earnings. |
| | £ | | £ | | £ | | £ | | £ | | £ | | £ | | £ | | £ |
| Number of Shifts.‡ | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — | Number of Shifts. | — |
| | | | | | | | | | | | | | | | | | |

* This return should give the actual net earnings for the first complete period of payment [whether week, fortnight, or month, according to the local practice] ending after 15th May or 15th November.
† By "net earnings" is meant the amount which a person receives after all deductions have been made for materials, tools, and sharpening.
‡ By "number of shifts" is meant the total number of individual shifts worked by the persons during the period.

## TABLE 18.

## RETURN OF SHIFTS WORKED.

*Name of Mine* _____.
*Situation of Mine* _____.
*County* _____.
*Name of Owner (Company)* _____.
*Postal Address* _____.

Return for the Year ending 31st December 1894.

| UNDERGROUND. | | | | | | | | | ABOVE GROUND. | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Persons employed in getting Coal, Ore, Rock, Stone, or other Mineral, or in sinking, driving, or excavating. | | | Other Persons employed Underground (excluding Officials, such as Foremen, Overmen, and Deputies). | | | | | | Persons employed in Picking, Screening, Washing, Dressing, Coking, Conveying, &c. (excluding Officials). | | | | | | | | | | Skilled Mechanics (Carpenters, Smiths, Fitters, &c.). | | | |
| | | | | | | | | | Males. | | | | | | Females. | | | | | | | |
| | | | Under 16 Years of Age. | | | Above 16 Years of Age. | | | Under 16 Years of Age. | | | Above 16 Years of Age. | | | Under 16 Years of Age. | | | Above 16 Years of Age. | | | | |
| Average Number employed.§ | Total Number of Shifts worked for the Year.* | Length of Shifts.† | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.† | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.† | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.‡ | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.‡ | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.‡ | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.‡ | Average Number employed. | Total Number of Shifts worked for the Year.* | Length of Shifts.‡ |
| | | Hours. | | | Hours. | | | Hours. | | | Hours. | | | Hours. | | | Hours. | | | Hours | | | Hours. |

* "The total number of shifts worked for the year" should be the whole number of shifts worked by all the persons employed.
† Length of shift from bank to bank.
‡ Inclusive of meal time.
§ The "average number employed" means the average of the two periods in June and December selected for the Wages Returns.

## TABLE 19.

### Form of Return for Mines under the Metalliferous Mines Regulation Acts.

RETURN FOR THE YEAR ENDING 31ST DECEMBER 189 .

*Name of Mine* _____

*Situation of Mine* _____

*County* _____

*Name of Owner (Company)* _____

*Postal Address* _____

### NUMBER OF PERSONS ORDINARILY EMPLOYED DURING THE YEAR.

The term "persons ordinarily employed," denotes the mean between two censuses, one taken in summer and the other in winter.

| Underground. | | | | Above Ground. Including persons employed in dressing minerals, and on private branch railways and tramways on premises adjacent to and belonging to the Mine. | | | | | | | Total Number of Persons employed Above Ground and Underground. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Male Persons. | | | | Males. | | | Females. | | | Total. | |
| Ages 12 to 13. | Ages 13 to 16. | Ages above 16. | Total. | Ages 10 to 13. | Ages 13 to 18. | Ages above 18. | Ages 10 to 13. | Ages 13 to 18. | Ages above 18. | | |
| | | | | | | | | | | | |

### MINERAL DRESSED, AND UNDRESSED MINERAL SOLD, TREATED, OR USED DURING THE YEAR.

| Description of the Mineral. | Undressed Mineral. | | | Dressed Mineral. | | | | Rent, Royalties, and Wayleaves. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity raised. | Percentage of Metal in the Undressed Ore. | Value of the Undressed Mineral at the Mine as raised. | Quantity of Undressed Mineral from which the Dressed Mineral was extracted. | Quantity of Dressed Mineral produced. | Percentage of Metal in the Dressed Ore. | Value of the Dressed Mineral at the Mine. | Rate of Rent or Royalties. | Rate of Wayleaves. | Total Amount paid | |
| | | | | | | | | | | For Rent or Royalties. | For Wayleaves. |
| | Statute Tons. | | £ | Statute Tons. | Statute Tons. | | £ | £ | £ | £ | £ |
| Alum Shale | | | | | | | | | | | |
| Arsenical Pyrites | | | | | | | | | | | |
| Barytes | | | | | | | | | | | |
| Chalk | | | | | | | | | | | |
| Clay, China Clay, Fire-clay, Potters' Clay | | | | | | | | | | | |
| Copper Ore | | | | | | | | | | | |
| Copper Precipitate | | | | | | | | | | | |
| Flint or Chert | | | | | | | | | | | |
| Gold Ore | | | | | | | | | | | |
| Gypsum | | | | | | | | | | | |
| Iron Ore | | | | | | | | | | | |
| Iron Pyrites | | | | | | | | | | | |
| *Lead Ore | | | | | | | | | | | |
| Limestone | | | | | | | | | | | |
| Ochre | | | | | | | | | | | |
| Phosphate of Lime | | | | | | | | | | | |
| Rock Salt | | | | | | | | | | | |
| Salt from Brine | | | | | | | | | | | |
| Salt contained in Brine and used for other purposes than Salt making. | | | | | | | | | | | |
| Slate | | | | | | | | | | | |
| Stone | | | | | | | | | | | |
| Tin Ore | | | | | | | | | | | |
| Zinc Ore | | | | | | | | | | | |
| Other Minerals, viz. :— | | | | | | | | | | | |

* If the mineral contains silver, state the number of ounces per statute ton of dressed ore.

Signed _____ Owner, Agent, or Manager.

_____ 189 .

TABLE 20.

Notice of Accident Form.

MINES REGULATION ACT.

**Accident No._____189___.**

*(Number to be filled in by the Inspector.)*

The following accidents should be reported immediately: (1) any accident causing loss of life. (2) any accident caused by an explosion of gas, or of any explosive, or of any steam boiler, and (3) any accident causing the fracture of any bone of a person employed.

(4) Any accident which has occasioned an absence from work of more than seven days should be reported within eight days after its occurrence.

1. *Date and Hour of Accident* _____
2. *Hour of Shift, or Number of Hours worked when Accident happened* _____
3. *Name of Mine* _____
4. *Name of Owner* _____
5. *Name of Person injured [killed]* _____
6. *Reputed Age* _____
7. *Occupation* _____
8. *Place of Accident* _____
9. *Cause of Accident* _____

10. *Nature of Injury* _____
11. *Probable duration of Disablement* _____

(Signed) _____, Owner, Agent, or Manager.

Date_____189___.

To _____, H.M. Inspector of Mines, _____

SIR,

I beg to inform you that _____, who met with an accident on _____ [died from the effects of the injury] returned to work on _____.

The result of the injury received is as follows:—

| Result of Injury. | | | | | | | | | | | | Duration of Disablement. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Death. | Loss of Right Hand or Arm. | Loss of Left Hand or Arm. | Loss of Part of Right Hand. | Loss of Part of Left Hand. | Loss of any Part of Leg or Foot. | Fracture of Limbs or Bones of Trunk. | Fracture of Hand or Foot. | Loss of Sight of one or both Eyes. | Injuries to Head and Face. | Burns or Scalds. | Lacerations, Contusions, and other Injuries not enumerated. | Days. |
| | | | | | | | | | | | | |

I am, Sir,

Your obedient Servant _____

NOTE.—A telegram will constitute a notice in writing within the terms of the Act, and in the case of a fatal accident or an explosion, the cost thereof, not exceeding one shilling, will be refunded by the Inspector. It is requested that full particulars should be sent by post on the form

# VOL. VI.

# FINAL REPORT

OF THE

# ROYAL COMMISSION ON OPIUM.

## PART I.

## THE REPORT,

WITH ANNEXURES.

Presented to both Houses of Parliament by Command of Her Majesty.

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# FINAL REPORT.

## SECTION I.

### The Scope of the Inquiry.

TO THE QUEEN'S MOST EXCELLENT MAJESTY.

May it please Your Majesty, we the undersigned Commissioners appointed to inquire into matters connected with the cultivation of the poppy in India and the manufacture and sale of opium, desire humbly to submit to Your Majesty our Final Report upon the questions referred to us for investigation.

2. The Resolution of the House of Commons, asking for the appointment of this Commission, is as follows :— Order of reference.

Having regard to the strong objections urged, on moral grounds, to the system by which the Indian opium revenue is raised, this House presses on the Government of India to continue their policy of greatly diminishing the cultivation of the poppy and the production and sale of opium, and desires that an humble Address be presented to Her Majesty praying Her Majesty to appoint a Royal Commission to report as to :—

I. Whether the growth of the poppy and the manufacture and sale of opium in British India should be prohibited except for medical purposes, and whether this prohibition could be extended to the Native States ;

II. The nature of the existing arrangements with the Native States in respect of the transit of opium through British territory, and on what terms, if any, these arrangements could be with justice terminated ;

III. The effect on the finances of India of the prohibition of the sale and export of opium, taking into consideration (*a*) the compensation payable, (*b*) the cost of the necessary preventive measures, (*c*) the loss of revenue ;

IV. Whether any change short of total prohibition should be made in the system at present followed for regulating and restricting the opium traffic, and for raising a revenue therefrom ;

V. The consumption of opium by the different races and in the different districts in India, and the effect of such consumption on the moral and physical condition of the people ;

VI. The disposition of the people of India in regard to (*a*) the use of opium for non-medical purposes, and (*b*) their willingness to bear, in whole or in part, the cost of prohibitive measures.

3. At the suggestion of the Government of India, we opened our inquiry, on the 8th of September 1893, by taking in London the evidence there available which the Society for the Suppression of the Opium Trade was desirous of placing before us. As it appeared that the majority of its witnesses referred chiefly to the subject in connexion with China, we thought it advisable to call for evidence from some of the persons present in England who have held responsible posts under the British Government in that country, and the opportunity was also taken of obtaining the views on the Indian aspect of the question of several witnesses of special experience, medical and administrative, who have retired from service abroad. Looking also to the fact that the greater part of the Indian opium revenue depends upon the export trade in the drug, which is principally with China and the Straits, and that prohibition of the production of opium in India would involve destruction of that trade, we thought it impossible to form a complete judgment on the moral objections raised against the Indian opium revenue system without considering the effects of that trade abroad. We decided, therefore, to request the Governors of the Straits and Hong Kong and Your Majesty's Minister in China to obtain the evidence of competent witnesses in the form of answers to

Note.—It has not been found possible to adhere consistently in the Minutes of Evidence and Appendices to the method of spelling sanctioned by the Government of India.

A glossary of Indian terms used in the Evidence and the Appendices has been added to our Proceedings. It is, however, desirable to explain in this place the Indian weights and measures :—

| | | | | | |
|---|---|---|---|---|---|
| a maund | = | 40 sers. | a masha | = | 15 grains |
| a seer | = | 2·057 lbs., or 16 chataks, or 80 tolas. | a rati | = | 2 grains. |
| a tola | = | 180 grains. | | | |

The terms lakh and crore are frequently used in the Evidence and Appendices. A lakh is 100,000 and a crore 10,000,000. It is not uncommon in India to write these figures thus, 1,00,000, and 1,00,00,000.

interrogatories. Copies of the questions thus sent out under the authority of the Commission, with the answers received, are given in Vol. V. of our Proceedings.

4. Our sittings in London were concluded about the middle of September. We then adjourned to meet again, in Calcutta. We resumed the taking of evidence on the 18th of November 1893.

5. A large number of witnesses came before us at Calcutta. In their evidence they dealt with the opium question under many aspects, and their examination occupied our attention until nearly the end of the year. During this period a section of the Commission consisting of Sir J. Lyall, Sir W. Roberts, Mr. Mowbray, and Mr. Pease, was deputed to pursue the local inquiry in Burma, whilst their colleagues continued the hearing of evidence at Calcutta. These sittings were brought to a close shortly after the return of the members who had visited Burma, and the Commission was able to begin its tour through Upper India on the 2nd of January, 1894.

6. Your Commissioners commenced their journey with a visit to Patna, the head-quarters of one of the two opium agencies under the Government of India. Leaving Patna, we proceeded successively to the cities of Benares, Lucknow, Ambala, Lahore, Delhi, and Agra. The evidence regarding the Native States in Rajputana was taken at Jeypore and Ajmer, and early in February a section of the Commission visited Indore, where a similar inquiry was held in reference to the Native States in Malwa and the rest of the Central India Agency. The other members of the Commission proceeded to Ahmedabad, as being the most convenient centre for the attendance of witnesses from the numerous States under the political control of the Bombay Government in Gujarat. The full Commission reassembled at Bombay, where, after taking further evidence, the inquiry in India was concluded on the 22nd of February. Public sittings were held on 70 of the 83 working days spent in India. After we left Patna, indeed, there were only two working days that were not thus occupied.

7. Before leaving India a special meeting of the Commission was held, in order that the general conclusions on the subjects of our inquiry might be discussed whilst the evidence was fresh in our minds, and in oral consultation with our colleagues the Maharaja of Darbhanga and Mr. Haridas Veharidas, who might probably be prevented from attending the sittings to be subsequently held in London. After full discussion, in which our Indian colleagues took an active part, we adopted certain draft resolutions, which form the basis of our Report. They are quoted at length in the concluding Section. p. 95–97.

8. It is advisable to offer here a few general remarks on the nature and source of the evidence on which are based the conclusions at which we have arrived. Taking into view that India is a country of vast extent and varied climatic conditions, peopled with many races with distinctive customs, it was obviously imperative to hear the evidence of a multitude of witnesses. In forming our opinions we have endeavoured to appraise the testimony of each individual or class under the strictest limitations of social or territorial experience. We lay some stress on this point, because, in regard to at least one aspect of the question under investigation, the sentiment or disposition of the population at large, and not merely the existence of certain concrete facts, is directly in issue before us.

9. The necessity for expediting the work at each centre precluded us from hearing the evidence in a definite and uniform sequence of subjects, an arrangement which has its obvious convenience and which, accordingly, was recommended to us by the Government of India in framing the outline of proceedings. At the outset an endeavour was made to observe some system in this respect, but experience soon proved that it would be necessary to abandon the attempt, and to examine such witnesses as might from time to time be in attendance, irrespective of the purport of what they had to state before us.

10. In the course of our inquiry questions have been raised as to the amount and character of the evidence submitted to us, and as to the conduct of the Government of India in connexion with the production of evidence and the selection of witnesses. We think it due both to ourselves and to the Government of India to deal with this subject in some detail, and to give in decided terms the judgment we have formed.

11. The first intimation of the views of the Government of India with reference to the production of evidence is contained in a telegram of the 15th of August 1893, addressed to the Secretary of State, in reply to a telegram from the latter, on behalf of the Chairman of the Commission, assuming that the Government of India would arrange "the course of inquiry, places to be visited, and witnesses." In their reply the Government of India stated, "We shall be prepared to suggest non-official witnesses "who will give independent evidence, but we cannot undertake to specially search for "witnesses who will give evidence against opium. We presume this will be done by "the Anti-Opium Society." V. p. 362.

12. In pursuance of this telegram and in order to meet the wishes of the Chairman, the Government of India, on the 8th of September 1893, prepared a sketch of the course which it was thought might be conveniently observed in conducting the inquiry, and a general outline of the route which the Commission might follow in the ordering of its tour throughout the Provinces of India. The Government of India, however, desired it to be understood, that in proposing a programme and itinerary they were merely putting forward suggestions for the consideration of the Commission, in the hope of thereby facilitating the completion of our labours. All questions connected with the course of inquiry, places to be visited, and witnesses to be examined, were to be finally decided by the Commission. V. p. 363.

13. The Resolution of the Government of India of the 8th of September 1893, with the proposed itinerary and course of inquiry, was forwarded with a covering despatch of the 20th of September 1893 to the Secretary of State, to be communicated to the Chairman of the Commission. It was also communicated to the Local Governments and Administrations of British India; to the Foreign Department for communication to the Agents of the Governor General in Rajputana and Central India, and to the Residents at Hyderabad and Baroda, and to the Adjutant General in India. V. p. 364.

14. The original itinerary proposed by the Government of India was of an extended character, which it would have been quite impossible for the Commission to have completed in the course of one winter. We were therefore compelled to contract its scope, and to omit from our tour tracts in which, as, for instance, in Assam, an investigation on the spot had been specially recommended by the Government. In the final arrangements made after our arrival in Calcutta, the visits to Orissa, North-Eastern Bengal, Assam, the Central Provinces and Berar, Hyderabad and the Madras Presidency were abandoned, and the Government of India were requested to arrange for the attendance of witnesses from these places at Calcutta and Bombay. Many other centres of inquiry in the other provinces which had been suggested by the Government of India had to be abandoned owing to the limited time at the disposal of the Commission.

15. In the meanwhile the Government of India, in conformity with the wishes of the Commission, had made arrangements through the various local Governments and Administrations for the attendance of witnesses at Calcutta and at the other centres of inquiry decided on by the Commission. These witnesses may be roughly classified under the following heads:—

(*a.*) Official witnesses, to give evidence regarding the extent of cultivation of the poppy, the manufacture and consumption of opium in India, the various systems of taxation in force, and the financial and administrative aspect of the question generally.

(*b.*) Selected officers, both civil and military, with experience regarding the consumption of opium by different races and in different parts of India, police officers and others connected with the administration of the criminal law, and gentlemen of the medical profession, both in the service of the Government and private practitioners, who had had opportunities of observing the moral and physical effects of the consumption of opium.

(*c.*) Non-official gentlemen of recognised standing, both native and European, who might present the case from different points of view, either in their individual capacities or as representing organised bodies of opinions.*

As regards the arrangements with Native States, the Government of India undertook to place before the Commission a full statement of all agreements now in force regarding the production of opium in such States, and its export from, and import into, them, and to give to the Commission every assistance in procuring a representation of

* With regard to the selection of witnesses of this class, we think it advisable to quote the actual instructions issued by the Government of India, which are given at page 367 of the 5th volume of our Proceedings (*para.* 7):—

"It is desirable that they should, if possible, be gentlemen of some social standing, of independence of "character and good general intelligence, and so completely in touch with public feeling in their respective "provinces as to command the respect and confidence alike of the people of India and of the members of the "Commission."

the views of the Native Administrations whose interests were involved in the questions referred to the Commission.

16. In order to obtain evidence in addition to that of the witnesses put forward at our request by the Government of India, we thought it our duty to issue advertisements inviting any person who wished, to appear before us. The response to this invitation was limited, but the evidence of some of these volunteer witnesses was of much importance. We may remark that many of the witnesses nominated by the Government of India and the Anti-Opium Society had, in the first instance, voluntarily tendered themselves.

17. Besides those put forward by the Government of India and those voluntarily tendering themselves in answer to our general invitation, a large number of witnesses was produced before us by the representatives of the Anti-Opium Society. In no single case was the evidence of any witness tendered for examination by them declined by the Commission. On the contrary, we may unhesitatingly say that every effort was made on our part to give them the fullest opportunity of setting forth their views. Mr. J. G. Alexander, the secretary of the Society, who accompanied the Commission throughout the inquiry in India, ably and energetically represented its interests, and we wish to place on record our acknowledgments of his services.

18. But owing to pressure of time, and to the number of witnesses other than those put forward by the Anti-opium Society, we were obliged on several occasions to take upon ourselves the responsibility of cutting down the lists submitted to us by Provincial authorities. On some of the earlier occasions this work was done for us, at our request, by the officers of the Government, but as their selection of the witnesses to be omitted was objected to by one of our colleagues, we arranged on subsequent occasions to make the selection ourselves. Our action in such cases was governed by the view that a trustworthy witness to matters fully within his own knowledge did not require confirmation by additional evidence.

19. In order to economise the time of the Commission, and to facilitate the examination of witnesses, we made a rule, at the commencement of our proceedings in India, to require every witness to furnish beforehand an abstract of the evidence which he was prepared to give. In the case of witnesses put forward by the Government of India or Provincial Governments, these abstracts were made out after the witnesses had been selected. In accordance with the general instructions under which they were acting, the Provincial authorities were guided in their selection of officials by their general knowledge of their training and experience. The non-official witnesses were selected as specially fitted, either by position or by knowledge and judgment, to speak in a representative character on behalf of different classes of the community. In the later stages of our inquiry, we adopted, at the request of the Government of India, the plan of incorporating in our Appendices the above-mentioned abstracts in the case of all witnesses tendered on the part of the Government, who attended for examination, but whose examination was not taken owing to the want of time. We considered this plan to be fair, since we were omitting many of the witnesses put forward by the Government, whilst accepting every one of those brought up by the Society for the Suppression of the Opium Trade.

20. It must be obvious that, in cases where the exigencies of time required the cutting down of lists originally submitted, the selection of witnesses after their abstracts had been sent in, by Government subordinates at the request of the Commission, necessarily gave room for some difference of opinion as to the inclusion or omission of particular names. Questions of this kind have been raised, and communications have passed between the Commission and the Government of India, which are set forth at length in the last Appendix to Volume V. of our Proceedings, to which we would refer for any detailed consideration. We wish to say, however, that in none of these cases did we find any ground for the imputation of partiality or unfairness in the selection or omission of names.

V. p. 362.

21. On the general subject of the evidence we desire to put on record our opinion, that the Government of India have consistently endeavoured to place the Commission in full possession of the actual facts of the case. We believe that the evidence, put forward by them, supplemented by that produced by the Anti-Opium Society, and that given by independent volunteer witnesses, forms a trustworthy ground for arriving at conclusions affecting vast provinces and enormous populations, exhibiting such distinctions in race, climate, and social and physical conditions as are rarely to be met with under the control of a single Government.

22. We are indebted to the Government of India not only for their assistance in regard to the presentation of witnesses, but also for the preparation of notes and memoranda describing in detail the systems under which the poppy is cultivated, and opium prepared and sold in that country. These documents are included in the volumes of our Proceedings, and have been found of the greatest use in elucidating the questions before us.

23. We wish to add an expression of our acknowledgments to Mr. R. M. Dane, of the India Civil Service, who was deputed by the Government of India to arrange for the attendance before the Commission of the witnesses nominated by them, and for the presentation of the documentary evidence, and also to supply any special information that might from time to time be required. Mr. Dane's arrangements throughout were most efficient, and on every occasion we received from him ready assistance.

24. We may conclude by stating that the number of witnesses examined was 723, of whom 466 were natives of India or China, and 257 Europeans. In the next Section of our Report we give a classified table of these witnesses.

## SECTION II.

### The Production and Consumption of Opium in British Provinces.

25. Of the special subjects on which your Commissioners are required to report, we propose first to consider the production and consumption of opium in the territories immediately under the administration of the Crown in India. We do not, however, include in our review the province of Burma. The opium question has there assumed an aspect differing materially from that which it bears in the rest of the Indian Empire, and for this reason we propose to consider the arrangements regarding opium in the two divisions of Burma in a later section of our Report. For the present, we confine our remarks to the provinces of India properly so called, and, under that limitation, we propose to treat of the cultivation of the poppy, the regulation of the sale of opium and preparations from it, the extent to which it is consumed, the evidence given before us as to the benefits, on the one hand, and the evils on the other, which are attributed to its use.

26. We may begin with citing the existing law on the subject. The production and sale of opium in British India are regulated by the General Opium Act of 1878, and the rules under it, in force throughout the territories administered either directly by the Government of India or by Local Governments and Administrations. We have included this enactment amongst the Appendices to the second volume of our Proceedings. Its general purport is to take power to prohibit the cultivation of the poppy and the
II. p. 533. manufacture of opium except under conditions provided in the rules, and to regulate the sale, possession, and transport of opium. The cultivation of the poppy and the manufacture of opium except on account of the Government, is prohibited throughout
II. p. 527. the whole of the old Bengal Residency by Act XIII. of 1857, and this, with its code of procedure and scale of penalties, we have thought it advisable to reproduce in our Proceedings for convenience of reference.

### Production.

27. With the exception of a limited quantity of opium produced for local use in the Panjab and in the small tract of Ajmer-Merwara, the whole of the supply produced in British India falls within what is known as the Bengal monopoly. Postponing the consideration of the production in these two special cases, we deal first with the subject of the monopoly.

The Bengal monopoly.

28. A general account of this system is given at pages 319 and 344 of Volume II. of our Proceedings; and at page 371 of the same volume will be found a brief summary of the proposals made during the last 30 years for its modification. We may therefore restrict ourselves here to the broad lines of the subject. The general features of the monopoly system may be thus summarised: the cultivation of the poppy is at present restricted, under Act XIII. of 1857, to the tracts included in the two Opium agencies of Behar and Benares. Within these limits, the growth of the plant is only permitted under license from the local officials of the Opium Department. The licenses are granted to individual cultivators, but in parts of the Benares agency, and the whole of the Behar agency, it is usual to conduct the negotiations with the representatives of those who wish to grow poppy in a village or group of villages. The area to be put under poppy is specified in the license, and a proportionate cash advance is made either to the cultivator in person, or, more frequently, to his representative. The land sown is subsequently measured, and it is then ascertained how far the agreement as to area has been fulfilled. The whole of the opium extracted from the poppy has to be delivered at local centres where it is
II. p. 321. weighed and roughly tested, each man's contribution being paid for at the rate fixed by the Government according to the degree of consistency. The final test as to weight and consistency is conducted at the head factories, and determines the difference between the value as estimated at the local weighment, and that by which the year's account with the cultivator, including the advance, is adjusted. The opium is then prepared at the factories for the market; a portion is issued for consumption in India under the Excise regulations, but the bulk is sent to the Government stores in Calcutta, where it is sold as provision opium, for export only, at monthly auctions. A certain amount of this provision opium is kept in stock as a reserve, in order that, if the crop should fall short in future years, the quantity placed each year upon the market may be kept as far as possible uniform.

29. The objects which it is desired to attain under the system we have described are as follows:—First, that the area devoted to poppy should be kept under State

control; secondly, that the cultivator should be furnished, if he agree to grow poppy, with the means of carrying out the season's operations; thirdly, that the cultivator should fulfil his obligation by devoting the advance in full to the purpose for which it was made, and finally, that the cultivator should receive a price fixed irrespective of variations of season, and in return, should deliver to the State the whole of the produce without any adulteration.

30. The following return shows the area sown with poppy in the two Agencies under this system during the last 10 years, together with the number of cultivators who received licenses:— Area under poppy in Bengal, &c. II. pp. 325, 344.

TABLE 1, showing EXTENT of CULTIVATION under the BENGAL MONOPOLY.

| Year. | Acres Cultivated. | | | Number of Cultivators. | | |
|---|---|---|---|---|---|---|
| | Behar. | Benares. | Total. | Behar. | Benares. | Total. |
| 1883–84 | 249,699 | 256,144 | 505,843 | 719,195 | 626,720 | 1,345,915 |
| 1884–85 | 270,726 | 294,520 | 565,246 | 665,353 | 713,973 | 1,379,326 |
| 1885–86 | 283,446 | 311,475 | 594,921 | 695,784 | 788,079 | 1,483,863 |
| 1886–87 | 286,416 | 275,636 | 562,052 | 717,043 | 731,465 | 1,448,508 |
| 1887–88 | 279,849 | 256,758 | 536,607 | 707,483 | 701,036 | 1,408,519 |
| 1888–89 | 253,666 | 206,198 | 459,864 | 632,718 | 563,049 | 1,195,767 |
| 1889–90 | 248,893 | 233,664 | 482,557 | 657,358 | 617,229 | 1,274,587 |
| 1890–91 | 254,975 | 246,744 | 501,719 | 654,870 | 651,871 | 1,306,741 |
| 1891–92 | 231,741 | 228,923 | 463,664 | 639,798 | 601,413 | 1,241,211 |
| 1892–93 | 241,100 | 213,056 | 454,156 | 637,585 | 558,286 | 1,195,871 |

In the Seventh Section of our Report we discuss the considerations on which the Government of India determine the area to be placed under poppy. We there state, also, the conclusions at which we have arrived in regard to the Bengal monopoly, and the recommendations we have to make where we consider alteration desirable.

31. We now pass on to the consideration of the excise system or regulations under which opium reaches the consumer. Under the Moghal and other dynasties which have successively held power in various parts of India, there does not seem to have been any system of excise. It appears from the Note prepared for us by Mr. Dane, that in some towns, perhaps, the right to sell opium was subject to a local fee, in the same way that certain other articles of luxury were taxed. As a rule, however, in towns, and universally throughout the rural tracts, there was no regulation of consumption until some time after the British had been established in Bengal. Excise regulations. VII. p. 32.

32. A monopoly of the purchase of opium from the cultivators had grown up in Behar under the Moghal Empire. In 1773 this monopoly was recognised by Warren Hastings and established as a State measure. At that time, however, importance was only attributed to the trade in opium to the Straits and China, and the consumption of opium in British territory attracted no special notice. But upon the prohibition in 1797 of the cultivation of the poppy in Bengal proper, and its consequent restriction to the Behar division of the province, the attention of the Government was drawn to the strong local demand for the drug, which was being met by systematic smuggling and clandestine production. The authorities, finding that they could not stop the consumption, decided to place it under regulation. At the same time, they distinctly declared that in taking this step they were desirous of countenancing only to the narrowest extent possible a habit which they found themselves unable to eradicate. First essays in excise in Bengal. VII. pp. 50–51.

33. Since 1813, when the first Bengal Regulation on the subject was passed, the Government of India has remained steadfast to the policy then set forth. There are modifications in detail, but the general lines of all the different systems now in force are identical, being designed to place the habit under restriction, and to raise, if we may adopt a phrase that has become popular in connexion with such topics, the maximum revenue from the minimum consumption. General excise policy.

34. The excise systems of the various provinces have been described in the notes presented to us on behalf of the Government of India. These documents were prepared by the chief excise authority of each tract, and will be found amongst the Appendices to our Proceedings. It is not necessary here to enter into details of the existing arrangements. Our present subject requires no more than a broad outline of the system which, originating out of the Bengal monopoly, has been extended, with the successive accretions of territory, to the whole of British India, with the exception of the Panjab and the small *enclave* in Rajputana, known as Ajmer-Merwara. Provincial systems. II. pp. 425, 456. IV. pp. 402, 432, 455, 511. V. pp. 83, 101.

General features of the excise regulations.

35. The main features of this system are that only Bengal opium provided by the State, or Malwa opium which has paid pass duty, should be sold, and that the sale should be restricted to persons specially licensed for the purpose. The number of shops for the retail of opium in each district is fixed by the Government. The right to sell at these shops is disposed of either by auction, by selection from tenders, or on payment of a fixed fee for the licence. In some cases it is found convenient to dispose of each shop separately; in others all the shops sanctioned for a district or a subdivision of a district are included in a single farm. The term of the licence is usually a year, though in special cases it extends to three years. All the opium sold by the licensee has to be obtained, as we have already stated, under Government sanction, either direct from the State stores, or, where Bengal opium is not used, from the stock which has paid the State duty. The price at which Bengal opium is issued to retail vendors is made to vary according to the facilities for smuggling, but is always considerably above the cost price to the Government. Where the introduction of contraband opium is difficult the price is higher than where the process is easy. Under this system, accordingly, the cost of opium is enhanced several times before it reaches the consumer: first, in the case of Bengal opium, by the price at which it is issued by Government to the retailer, and in that of Malwa opium, by the pass duty and the imposts to which the drug is subjected in the States where it is produced; secondly, by the sums paid by the retail vendors or farmers for their monopoly; and finally, by the profit from the retail sale which the monopoly enables them to obtain.

Special measures.

36. Various supplementary measures have been from time to time adopted in order to protect the revenue on the one hand and the consumer on the other. Amongst others, we may mention the plan of demanding a guarantee that the farmer should annually take a minimum quantity of taxed opium. The object of this system was to provide against the sale of cheap illicit opium by the vendors, which was then prevalent, and to give them an additional inducement to prevent the use of such opium within the area to which their licenses extend. This plan was in force for some time in Bombay and the North-West Provinces, and was believed to be successful, but has been recently abandoned. In the last-named province, certain subdivisional officials are allowed to sell opium by retail concurrently with the licensed vendor. The object of the arrangement is to protect the consumer against adulteration of the opium supplied by the vendors, and against the combination of the vendors to raise the price at which they retail their opium.

III. 13,686. IV. 26,163–8. V. p. 86.

Limitation of quantity saleable.

37. We may conclude this sketch of the main features of the general system by observing that in all provinces a limit is placed on the amount of opium, or preparations of opium, which may be sold to any individual, or of which a person may be legally in possession, at any one time. The actual quantity allowed differs mainly with reference to the character of the country, the accessibility of the licensed shop, and the habits of the people. The usual range is between 360 and 900 grains of the crude drug, as issued for consumption, but in the thinly populated tracts of Sindh, bordering on the desert, the limit is raised to 1,800 grains. The quantities now fixed are shewn in the following table:—

TABLE 2, showing the PRICE at which OPIUM is issued, and the MAXIMUM AMOUNT saleable by RETAIL at one time.

| Province. | Maximum Quantity allowed to be in the possession of any Individual at once. | | | Rate at which Crude Opium is issued per Ser. (2·057 lbs.) |
|---|---|---|---|---|
| | Crude Opium. | Preparations for Smoking. | Poppy Heads. | |
| | Grains. | Grains. | Lbs. | Rupees. |
| Bengal | 900 | 180 | 10·28 | 16 to 32 |
| Assam | 900 | 180 | — | 37 |
| N.W. Provinces and Oudh | 540 | 180 | — | 16 to 18 |
| Punjab | 540 | — | 10·28 | —† |
| Bombay | 360 | 360 | — | —* |
| Madras | 540 | 180 | 10·28 | —* |
| Central Provinces | 360 | 360 | 2·057 | 22 |
| Berar | 900 | — | — | —* |

* Malwa opium being here used, there is no issue by the Government.
† Both Malwa and local opium are used in the Punjab, this column cannot therefore be filled in.

38. In Bengal, Assam, the North-West Provinces and Oudh, the Central Provinces, and Burma, Bengal monopoly opium is obtained by the local governments and issued to licensed vendors. In Western and Southern India licensed vendors supply themselves with opium obtained from the Central India and Rajputana States under the Malwa or pass-duty system, which will be dealt with in the next Section of our Report. Provision of excise opium.

39. In Ajmer-Merwara, which covers only some 2,700 square miles, no general restriction of the cultivation of the poppy has been attempted, owing to the fact that this, the British portion of Rajputana, is completely surrounded by States under Native rule, where absolute freedom as to cultivation exists and the use of opium is probably more widely spread than in any other part of India. Except in the four chief towns there is no restriction on consumption. A part of the produce is consumed locally; the remainder is exported to the adjacent Native territory. Special arrangements in Ajmer. IV. p. 408.

40. In the Panjab, the system in force is somewhat different from that which prevails in the rest of the country; the essential difference, however, relates only to the manner in which the opium sold by the licensed dealers is procured; in regard to the limitation of the number of shops and the taxation of retail vend, the systems are practically identical. The greater part of the opium consumed has always been imported from the Protected States, by which the province is bordered on two sides, whilst a small quantity has been brought in from Afghanistan. This trade was formerly unrestricted. Within the Panjab itself no restriction was placed under the Sikh administration on the cultivation of the poppy, but the production was nowhere very considerable, and in most tracts the plant was grown merely for the capsule, an infusion of which called *post* was in popular demand. On the acquisition of the province by the British from the Sikhs it would have proved a highly unpopular measure to prohibit the cultivation altogether, and in some places the prohibition would have resulted in serious injury to the cultivators. Moreover, had such a measure been enforced, and Bengal opium only been issued for sale, it would have been most difficult to repress the competition of smuggled opium finding its way by customary routes from non-British territory. The cultivation was therefore allowed to continue, but on the condition that the opium produced should only be sold to licensed dealers, who paid for their monopoly of the trade. Subsequently, a duty of Rs. 2 per acre was imposed on the poppy crop. By these measures an excise revenue was raised on the home-grown article. In 1889 power was taken to enhance this duty up to Rs. 8 per acre. Of the imported opium, that from the Native Hill States within the province and from Kashmir and Afghanistan is subject to no pass duty. It is taxed through the sums paid for licenses by dealers, who alone are allowed to import it. The States of Rajputana on the southern frontier of the Panjab, are differently treated. Malwa opium, up to an annual quantity determined by the Government, is allowed to be imported from them, on payment of a low pass duty, by wholesale dealers licensed for the purpose. With this exception, imports of opium from these States are prohibited. A small quantity of Bengal opium is also consumed in the eastern portion of the province, obtained by retail vendors from the Government treasuries. The details of the licensing system are given at page 110 of the fifth volume of our Proceedings. Special system in the Panjab. V. pp. 101–4. V. p. 120. V. p. 110. V. p. 103. V. p. 105.

## Consumption of Opium.

41. The common mode of consuming opium in India is to take it in the shape of pills. In some parts of the country, and chiefly on social and ceremonial occasions, the opium is dissolved in water and drunk. In the Panjab and a few other tracts in Upper India an infusion of the capsule of the poppy, called *post*, is often drunk in the villages. The forms in which opium is smoked in India are known as *chandu* and *madak*. The use of *chandu*, or the Chinese preparation of opium for smoking, is one of comparatively recent introduction into India, and has not spread beyond the larger towns and military cantonments. The habit of smoking *madak* is of long standing in some of the eastern parts of the country. The details of the composition, and the process of preparation of *chandu* and *madak* are given in the Memorandum by our medical colleague, Sir William Roberts, appended to our Report. Forms in which opium is consumed in India. V. p. 120. V. p. 57. III. 18,795, 16,902. II. p. 426.

42. The most complete and trustworthy information on the subject of the consumption, so far as licit opium is concerned, is to be found in the official statistics of the quantity issued to the consumer in accordance with the regulations which have been described above. These have been presented to us by the Government of India or the Local Governments and Administrations. The results, taking the province as General extent of consumption.

the unit, are summarised in the following table, which shows in a convenient form the diversity which exists in the different parts of the country:—

TABLE 3, showing CONSUMPTION of OPIUM in the various PROVINCES of BRITISH INDIA.

| Province. | Area. | Population (1891). | In 1892–93. Shops for sale of | | | Amount of Crude Opium issued. | To each Shop. | | Annual Consumption of Opium per Head. |
|---|---|---|---|---|---|---|---|---|---|
| | | | Opium. | Smoking Preparations only. | Poppy-heads only. | | Mean Area. | Mean Population. | |
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
| | S. Miles. | | | | | lbs. | S. Miles. | | Grs. |
| Assam | 45,504 | 5,433,199 | 866 | 16 | — | 109,741 | 52 | 6,160 | 141 |
| Bengal | 144,443 | 71,069,643 | 1,714† | 334 | 47 | 159,171 | 69 | 33,923 | 15 |
| Berar | 17,718 | 2,897,491 | 478 | — | — | 37,876 | 37 | 6,062 | 91 |
| Bombay | 77,275 | 15,985,270 | 845 | — | — | 108,980 | 91 | 18,918 | 47 |
| *Sindh* | 47,789 | 2,871,774 | 300 | — | — | 18,052 | 159 | 9,572 | 44 |
| Central Provinces | 81,300* | 10,046,546* | 1,481‡ | 182§ | — | 52,248 | 49 | 6,041 | 34 |
| Madras | 141,189 | 35,630,440 | 906 | 98 | 30 | 74,984 | 136 | 34,459 | 14 |
| N.W. Provinces | 83,286 | 34,254,254 | 839 | 14¶ | — | 119,470 | 97 | 40,157 | 24 |
| *Oudh* | 24,217 | 12,650,831 | 188 | — | — | 27,217 | 129 | 67,291 | 16 |
| Panjab | 110,667 | 20,860,913 | 1,780‖ | — | — | 125,292 | 62 | 11,158 | 42 |
| Total | 773,388 | 211,700,361 | 9,397 | 644 | 77 | 833,031 | 76 | 20,923 | 27 |

* Excluding mediatised chieftainships. † Excluding 1,264 druggists' licenses. ‡ Including 508 temporary licenses at fairs and markets.
§ Including 10 temporary licenses. ‖ Includes the sale of poppy-heads. ¶ To be closed on expiration of current licenses.

Ajmer, Coorg, and British Balochistan, which, though nominally provinces, are in point of population small districts, have not been included in the above table.

Proportion of opium shops to area and population.

43. It will be seen that in the area to which Table 3 refers, and this includes nearly the whole of British India, except Burma, each shop supplies an average area of 76 square miles, containing a population of, approximately, 21,000. This, however, is no more than a convenient arithmetical expression; the details show that the average area is approached in Bengal alone. Looking to other parts of India, the extremes are found in Berar, where there is a license to every 37 square miles, and in Sindh, in which thinly peopled tract the corresponding area is no less than 159 miles. The variation is still more strongly marked in respect to the average population served from each licensed establishment. In no individual case is the general figure typical of the actual local distribution. A shop in Oudh, for instance, suffices for more than 10 times the population served by one in the Central Provinces, Berar or Assam, and for double the population for which a shop is provided in the densely peopled province of Bengal.* In the above calculation shops for sale of poppy-heads only or of smoking preparations, where they exist, are included. But for this, the area served by each shop would be 82 square miles, with a population of 22,530. This is, perhaps, the more correct average, since the special shops are supplementary to the others, and serve but a small body of consumers.

Average consumption per head, in provincial detail.

44. The last column of the table shows the consumption of opium per head of population. For the whole area dealt with in the table the quantity averages 27 grains per head annually. The extremes are found in Madras, where the average consumption is but 14 grains, and Assam where it rises to 141. Below the general average, we find, in addition to Madras, the provinces containing the great opium-producing tracts, namely, Bengal, the North-West Provinces, and Oudh. Above the average come Assam, Berar, Bombay, the Panjab, and the Central Provinces. Some of the provinces manifest so great an internal diversity in population and physical characteristics that the figures for each, taken as a whole, are of little use in connexion with the present subject, though they serve to exhibit the variety that exists in India generally. We will comment, therefore, on those parts of the country in which discrimination on considerations such as are mentioned above appears to us to be especially desirable. It is important to remember that the figures of consumption are those of licit opium only, and that illicit opium is no doubt consumed in considerable quantities in parts of some provinces.

II. 3099. V. p. 85. III. 10,852, 11,548, 13,867.

* In the above calculation for Bengal, the 1,264 druggists' licenses are not taken into account.

45. In Bengal, the Orissa Division, which has many damp and malarious tracts, shows a mean consumption of 47 grains annually, or thrice the incidence of the province as a whole. At the other end of the scale are the seven districts of the Patna division of Behar, in all of which the cultivation of the poppy is permitted under the monopoly system. Here the consumption is shown as no more than 2 grains per head of a population of 16 millions. In these districts some opium is believed to be illegally retained by the growers for domestic consumption. Between these extremes we find the districts of the Dacca division, containing a population of nearly 10 millions, with an average consumption of 5 grains per head. The wilder portion of the province, on the hills and table-land of Chutia Nagpur, returns an average consumption of a grain above that in the east delta. The city of Calcutta stands by itself in the tables of Bengal. The population, including that of the suburbs, is shown as consuming no less than 276 grains per head. Bengal.* II. p. 34.

46. Assam is the next province we have to consider. Here the consumption of opium has fallen considerably since the introduction of the system of charging a fee for licenses. In 1873–74, the last year in which the permission to sell was granted free of payment, the amount of opium issued was 152,794 lbs. The price of opium and the license fees having been raised from time to time and other changes having been introduced, by 1877–78 the annual consumption had fallen to 140,480 lbs. In 1883, the present system of licensing individual shops was adopted, and by the year 1892–93 a further falling off had taken place, and the issues for that year were only 109,741 lbs. Under Burmese and the preceding Native, rule, the production of opium was subject to no restriction, and after the annexation by the British in 1826, the same liberty was allowed to continue until 1860. Even now a certain amount of poppy is grown in the surrounding hill tracts, beyond British influence. The details of the returns show that large consumption is confined principally to the Assam valley, along the damp and low-lying country bordering the Brahmaputra River on both sides. Here the general use of the drug which existed before the country came under British rule still widely prevails, and though the amount has decreased, the average annual consumption reaches 357 grains per head. The largest consumers are the Mikir tribe, of whom, according to the estimate of the Commissioner of Excise for the province, from 80 to 85 per cent. eat opium. Amongst the purely Assamese community the proportion is estimated by the same authority not to exceed 30 or 35 per cent. In the southern and western part of the province the average annual consumption is only about 12 grains per head, rising to 30 grains amongst the tribes of the hill tracts. Assam.* II. p. 455. II. 5621, 9016, 9547, 9671. II. p. 458.

47. In the North-West Provinces the average annual consumption is returned at 24 grains per head. In Oudh, during Native rule, which only ended in 1856, there was no restriction on cultivation or sale. The corresponding figure there falls to 15. It must be borne in mind, however, that the cultivation of the poppy is permitted under license in every district of Oudh, a fact which in some degree accounts for the small consumption of licit opium. The existence of a large city in which the traditions of a corrupt Musalman court have not yet been obliterated explains, probably, the high rate of consumption in the Lucknow district, where it is seven times as high as that in the rest of Oudh. The influence in this respect of a large town is not confined to Lucknow alone, since the consumption in the districts in which are situated the towns of Lucknow, Benares, and Cawnpore, in the vicinity of which poppy cultivation has been prohibited since 1877, amounts to 85 grains per head, or nearly five times that of the rest of the combined provinces, where only 18 grains per head are consumed. The increase in actual licit consumption from 125,806 lbs. in 1882–83 to 146,687 lbs. in 1892–3, is attributed chiefly to the more efficient measures taken of late years for the prevention of the use of contraband opium, whether retained by the producers or smuggled from Nipal and elsewhere. North-West Provinces and Oudh.* V. p. 86. V. p. 93. V. p. 86, par. 16, V. p. 90. III. 19,102, 19,530.

48. Our observations in regard to increased consumption of opium in the North-West Provinces apply, with perhaps still greater force, to the increased consumption shown in the Panjab returns within the last nine years. During this period the persistent smuggling that went on along the comparatively unprotected Rajputana frontier has been gradually checked by capture of smugglers' trains, and by allowing a certain amount of Malwa opium to be lawfully imported on payment of duty. The average consumption during the past ten years was 112,394 lbs., but, whereas in the first six years of this period the average was only 95,527 lbs., since the reduction of the duty on Malwa opium in 1888–89, it has risen to 122,474 lbs. Between the years 1887–88 Panjab.* V. p. 110. V. p. 109.

* The average consumption given in this and the following paragraphs is calculated from the Tables inserted in the Notes on the excise systems of the different provinces given in our Appendices. The quantity of opium returned against each district, (at 7,000 grains = 1 lb.) is divided by the population.

and 1888–90, the returned consumption in the two important districts of Ludhiana and Ferozpur was nearly doubled, a rate of increase which is stated to be entirely due to the prevention of smuggling, and to the substitution of taxed for untaxed opium. We see no reason to doubt this explanation. The nominal increase represents, so far as we can judge, no extension of the habit of indulgence in the drug. In regard to the unequal distribution of the rate of consumption in this province, we must not omit to call attention to the influence of social or religious custom which is so strongly shown in the case of the Sikh community. Of the Sikhs about 80 per cent. are to be found in the seven districts marginally named. The total population of these districts constitutes only about 31 per cent. of the whole province, but the licit opium consumed within their limits bears a proportion of 66 per cent. to the total for the Panjab. Our Table 3 shows that the mean annual rate of consumption for the whole province is about 42 grains per head, but it falls to 23, if these seven districts be excluded. Within these, taken separately, it rises to 104 grains. In five of them the infusion of poppy heads, known as *post*, is also in common use. In connexion with this point, we may call attention to the fact that, whilst the total consumption of licit opium amongst the 20 millions of the British districts averages 112,394 lbs. annually, that of the Patiala State, with its population of 1,583,000, is returned at 98,736 lbs. The consumption per head in the latter is, therefore, more than 10 times that in the former. Similarly in the smaller Sikh States of Nabha and Jind, the incidence of consumption is 366 and 180 grains respectively, or considerably higher even than that of the British Sikh districts. The habit of smoking preparations of opium is of comparatively recent introduction into this province, and since the 1st of April 1890, no licenses for the sale of such preparations have been granted.

| | |
|---|---|
| Ambala | 68,448 |
| Jalandhar | 90,320 |
| Ludhiana | 127,143 |
| Ferozpur | 81,219 |
| Lahore | 125,591 |
| Amritsar | 216,337 |
| Gurdaspur | 72,395 |

V. p. 108–9.

III. 16,218, 16,280, 16,259.

V. p. 110, par. 22. III. 15,713.

Bombay Presidency.

49. In the Bombay Presidency almost as great a variety is found in the rate of consumption as in Bengal. It is true that in Bombay city the consumption does not equal that which we have noted above as prevailing in Calcutta, the western capital being credited with only 155 grains per head of its population, against the 276 of the metropolis. But, taking the other divisions of the province, we find the high rate of 94 grains in Gujarat, where a considerable Rajput population, is surrounded by lower classes with a marked habit of imitating Rajput customs. In the Deccan the rate decreases as the south is approached, and where the Karnatak, or Kanarese country, begins, the consumption of opium reaches its minimum of four grains. The Konkan, or strip of land along the coast from Malabar to Bombay, returns an average of five grains, but this rate is raised by the inclusion of the two northern districts, adjacent to Bombay, where it rises to 10 and 8 grains respectively. Sindh approaches the Deccan average, but it is probable that the actual consumption is much larger than that returned, as smuggling from Rajputana is very easy. The amount of opium returned as consumed in the Presidency as a whole varied but little during the last 10 years, considering the comparatively rapid growth of the population in Sindh and the Deccan. In 1883, the figure was 117,440 lbs., and in 1893, 127,010 lbs.

IV. p. 280.

III. 18,545.

50. In connexion with the sudden apparent increase in the consumption that took place in Gujarat some 17 or 18 years ago, we may point out that the difference is only in the returns, licit opium having been substituted for contraband. Up to the year 1878 opium was smuggled so freely from Malwa, that the demand for duty-paid opium was insignificant. Efficient arrangements were then made to protect the frontier by conventions with the surrounding States, and the measure of making the licensed vendors take a minimum quantity of licit opium was adopted. The results are to be traced in the following table:—

IV. p. 479.

IV. p. 480.

TABLE 4, showing the QUANTITY of OPIUM issued to, or imported by LICENSED VENDORS in GUJARAT.

| — | Average of 3 Years. 1874–77. | 1877–78. | 1878–79. | 1879–80. | 1892–93. |
|---|---|---|---|---|---|
| | lbs. | lbs. | lbs. | lbs. | lbs. |
| Ahmedabad | 3,274 | 2,853 | 6,363 | 16,139 | 15,104 |
| Kaira | 167 | 140 | 2,683 | 8,262 | 10,104 |
| Broach | 233 | 210 | 2,898 | 6,448 | 8,672 |
| Surat | 816 | 865 | 1,445 | 2,326 | 3,102 |
| Total, Gujarat* | 4,490 | 4,068 | 13,417 | 36,352 | 40,413 |

* Including the Panch Mahals, for which figures are not available till 1878–79.

The substitution above mentioned is clearly established by the sudden rise notwithstanding an increase in the price, showing the demand already in existence. The evidence taken by us at Ahmedabad conclusively showed that before 1878-9 opium was cheaper and easier to get, and consumption greater than it has been since that date. Similar results followed the introduction of better preventive measures in Khandesh a few years later. IV. 22,745, 22,768, 23,615, 23,757, 24,223, 24,240, 24,571 24,662.

51. In the Central Provinces the consumption seems to have remained stationary for some years. In 1883, the amount was returned at 52,496 lbs.; in 1893, at 52,248 lbs. The rate of consumption varies from 12 grains per head in the Damoh district to 71 in the Wardha district. There used to be much smuggling into these provinces from Central India, and it has not yet been possible to stop it. The real consumption is no doubt greater than is shown by these figures. Most of the districts in these provinces were not annexed until 1854, and the free cultivation of the poppy, allowed under Native rule, was not stopped till some time after annexation. Central Provinces. IV. p. 525. IV. 28,257.

52. In Berar there is no special feature in the consumption requiring comment. The average rate is high, on the whole, and varies considerably from district to district. In Elichpur, for example, it reaches a rate of 154 grains per head, whilst in Basim it recedes to 35 grains. Berar. IV. p. 522.

53. In the Madras Presidency we find the consumption of opium at its lowest. Excluding the city of Madras, the district of Malabar, and the four north-eastern coast districts, the average annual consumption among 27 millions of people is only 2¾ grains per head. The highest rate is not found, as in most other parts of India, in the chief city, where it is only 26 grains per head, but in the four north-eastern districts adjoining Orissa, a tract subject to heavy rainfall, and comprising large areas under rice in the plains with a still more extensive area of forest-clad hill inland. Here the consumption of opium amounts to 84 per cent. of the quantity consumed in the whole Presidency, giving an average of 51 grains per head. We may note that up to 1880 no restriction was placed in the Madras Presidency on the importation, possession or sale of opium, and it was then generally considered that the local use of the drug was very small. This is no doubt true, as the above figures show, with regard to the greater part of the province. The inquiries, however, as to the extension to this Presidency of the Opium Act of 1878, brought to light the fact that the consumption in the north-east tracts was considerable. In 1883-4, the year in which the present system was introduced, the number of shops was 1,117, whereas it is now 1,034, and the consumption of opium has fallen from 77,676 lbs. to 74,984 lbs. Madras Presidency. IV. 25,437, 25,477. IV. 25,430, 25,471. IV. p. 433, 25,461. IV. pp. 440–1.

54. Before entering upon the subject of the character and effects of the opium habit, we may offer a few general observations in regard to the great variety in its territorial prevalence which has been described above. In some extensive tracts as, for instance, Southern India, and the Deccan, the use of opium appears to be inconsiderable. Elsewhere, as for instance in the North-West Provinces and Oudh, the rural tracts present a strong contrast in this respect to the larger towns, and it is by the higher consumption in the latter that the provincial average is materially raised. It is necessary to bear in mind that these returns deal with licit opium only, and that in towns, for various reasons, the real consumption is more confined to licit opium than in the rural tracts. On this supposition the distinction between town and country, though possibly considerable, is not actually as striking as it appears in the official returns. When we come to tracts like Orissa, the north-eastern districts of Madras, the Central Provinces, the Assam Valley, the Central Panjab, and the northern parts of the Bombay Presidency, the habit appears to be general and equally diffused amongst the town and the country population. As to the consumption of opium generally, we come to the conclusion, that whilst the use of this drug is more pronounced amongst certain classes and in certain localities than elsewhere, it is widely scattered over the length and breadth of India. General distribution of consumption of opium.

## The Evidence regarding the use of Opium and its Effects on the Consumer.

55. We now proceed to deal with the evidence brought before us at the different centres visited by the Commission during its tour in India. In order to show the character and variety of the testimony on which our conclusions are based, we first give the classification of the witnesses, grouped under their main heads of occupation:— Classification of witnesses.

TABLE 5, showing the NUMBER, RACE, and OCCUPATION of WITNESSES.

| Occupation. | No. of Witnesses. | | |
|---|---|---|---|
| | Total. | European and American. | Indian and Chinese. |
| 1. Officials at Head Quarters, Lieut.-Governors and Chief Commissioners. | 14 | 14 | — |
| 2. „ Divisional and District | 51 | 31 | 20 |
| 3. „ Political (*i.e.*, employed in connexion with Native States) | 6 | 5 | 1 |
| 4. „ Opium and Excise Departments | 14 | 11 | 3 |
| 5. „ Pensioned | 12 | 3 | 9 |
| 6. Military officers | 27 | 13 | 14 |
| 7. „ pensioners | 9 | — | 9 |
| 8. Chiefs and officials of Native States | 87 | 3 | 84 |
| 9. Landowners and tenants | 88 | 4 | 84 |
| 10. Planters | 12 | 10 | 2 |
| 11. Merchants and mill-owners | 83 | 14 | 69 |
| 12. Christian missionaries and catechists | 47 | 40 | 7 |
| 13. Professors and Schoolmasters | 8 | — | 8 |
| 14. Medical practitioners (under Government) | 81 | 65 | 16 |
| 15. „ „ (private and pensioned) | 65 | 13 | 52 |
| 16. „ missionaries | 15 | 15 | — |
| 17. Representatives of Associations* | 52 | 9 | 43 |
| 18. Religious teachers (other than Christian) | 5 | — | 5 |
| 19. Lawyers | 27 | — | 27 |
| 20. Journalists | 8 | 1 | 7 |
| 21. Miscellaneous:— | | | |
| (*a.*) Civil engineers | 2 | 2 | — |
| (*b.*) Labour contractor | 1 | — | 1 |
| (*c.*) Municipal commissioners | 2 | — | 2 |
| (*d.*) Actuary | 1 | 1 | — |
| (*e.*) Writer | 1 | — | 1 |
| (*f.*) Students at college | 2 | — | 2 |
| (*g.*) Without occupation | 3 | 3 | — |
| TOTAL | 723 | 257 | 466 |

* This heading includes representatives of important bodies, such as the Chambers of Commerce, and the Millowners and Planters' Associations, as well as those of numerous small local societies.

56. The above classification is necessarily imperfect. For example, the representatives of associations have in most cases more definite occupation, which will be found against their names in the Index. The two municipal commissioners are so described because they appeared before the Commission in that capacity only. The pensioned military officers were in almost all cases also landed proprietors, and the heading of private medical practitioners includes both the qualified and the unqualified members of that profession. On the whole, however, the summary fulfils the purpose for which it is immediately intended, and sufficiently indicates that the information obtained by us has been derived from all the main interests of the country, in so far as they can be represented by typical witnesses of sufficient education and experience to speak for their respective communities. We should add that the table includes the 34 witnesses heard in England, most of whom gave evidence regarding the opium question in China, and the 37 witnesses who spoke as to Burma only.

VII. p. 228.

Classification of the Anti-opium witnesses.

57. We also think it desirable to give a separate classification of those witnesses included in Table 5, who were presented by the Society for the Suppression of the Opium Trade. It must be understood, however, that this list is only approximately correct, and that these are not the only witnesses who gave evidence adverse to the use of opium except for medical purposes.

These witnesses fall into three main groups: first, the 24 medical practitioners; secular and missionary; second, the 30 missionaries and catechists; and third, the Native witnesses, other than medical, including the minor officials, lawyers, journalists, and the representatives of various associations.

TABLE 6, showing the NUMBER and CLASSIFICATION of WITNESSES presented by the ANTI-OPIUM SOCIETY.

| Occupation. | Number and Race. | | |
|---|---|---|---|
| | Total. | European and American. | Indian and Chinese. |
| 1. Government officials | 4 | — | 4 |
| 2. „ ex-officials | 8 | — | 8 |
| 3. Landowners and tenants | 6 | — | 6 |
| 4. Merchants and shopkeepers | 11 | 3 | 8 |
| 5. Lawyers | 7 | — | 7 |
| 6. Journalists | 4 | — | 4 |
| 7. Medical practitioners | 14 | 4 | 10 |
| 8. „ missionaries | 13 | 13 | — |
| 9. Missionaries | 39 | 34 | 5 |
| 10. Catechists and mission teachers | 5 | — | 5 |
| 11. Preachers (other than Christian) | 2 | — | 2 |
| 12. Representatives of Associations* | 26 | 3 | 23 |
| 13. Professors and masters | 2 | — | 2 |
| 14. Miscellaneous | 11 | 3 | 8 |
| TOTAL | 152 | 60 | 92 |

* One of these witnesses represented a political association in Calcutta, and addressed the Commission on the system of poppy cultivation in Behar. Of the others, three appeared on behalf of the English Anti Opium Society, eight represented the Brahmo Somaj of Bengal, and the rest, societies for the promotion of abstinence from stimulants in Upper India and Bombay.

58. In dealing with the evidence as a whole, we desire to say that, in our opinion, both the disadvantages and the advantages attending the use of opium have been in many cases overstated. It was inevitable that in an inquiry of this nature there should be some exaggeration. Strong convictions have been held on either side, and witnesses have insensibly been led to dwell on what accorded with their convictions, and to leave out of sight what might tell in the opposite direction. In forming our conclusions, therefore, we have throughout endeavoured to make allowance for this. Apart from the necessity of giving weight to individual testimony, in accordance with the representative character of the witness and his opportunities for observation, we have felt it our duty to look particularly to fairness of mind and sobriety of judgment.

Appreciation of the evidence.

59. No part of the evidence deserves more attention than that of the medical witnesses.† A large and important section of these were members of the Indian Medical Service, and we naturally attach great weight to their testimony. We think it right, therefore, to state briefly how this branch of the public service in India is recruited, and what opportunities its members possess for observing the effect of the use of opium on the health and morality of the people of that country. Admission to the Indian Medical Service can only be gained by severe competition among those who have already qualified as medical men in the United Kingdom; and the selected candidates have to pass through a course of special training for Indian service. On their arrival in India they are required to do medical duty for a certain period with Native troops, and a great part of them pass subsequently into civil employ, as civil surgeons in charge of districts. In this capacity they are responsible for the medical administration of the district, including dispensaries, hospitals, and jails, and frequently have a large private practice among the upper classes of the Native community as well as among Europeans. By education, therefore, as well as by training and experience, they are well qualified to speak with authority as to the effects of the

General character and weight of medical evidence. II. p. 136. (Q. 5178–97).

† We think it necessary to make a few observations regarding a petition against the use of opium except for medical purposes presented to the House of Commons in 1892, purporting to be the expression of the views of 49 independent Native medical practitioners of the city of Bombay. Some weight was attached to this petition in England; and subsequently it attracted special attention in India, owing to the fact that almost all the signatories either disavowed the views contained in the petition or denied that they had signed it. The circumstances in which the petition was prepared were described at some length before us in Bombay by the local representatives of the Anti-Opium Society. We are satisfied that they acted with good faith in the matter, but it was admitted that the petition was drawn up without communication with any of the medical men who were asked to sign it, and that it was sent round for signature by the hands of a messenger. Not one of the signatories came before us to support the views which it contained, though one of those who gave evidence expressed opinions generally adverse to opium. Five others repudiated those views, stating either that they had not signed the petition, or that they had signed without any real knowledge of its contents. It is evident, therefore, that this petition, as an expression of independent medical opinion, is entitled to no weight.

IV. 27,380, 25,599, 25,609–15, 25,670, 25,686, 25,777–8, 25,780, 25,787, 25,790, 25,842, 25,846, 25,966, 25,97".

use of opium in India, and their professional standing is a guarantee of their independence of character.

General motives for taking opium.

60. Looking to the whole body of the evidence we find it proved beyond reasonable doubt that the prevalence of the use of opium is founded, first, on the universal tendency amongst mankind to take some form of stimulant with which to comfort or distract themselves, and, secondly, on the wide-spread popular belief in the medical or quasi-medical efficacy of the drug. It is important, however, to point out that many of the witnesses failed to draw any clear distinction between the medical use and that which cannot correctly be so described. It is constantly found that the opium habit dates from the time when the drug was taken for medical purposes. In some cases the chronic or recurrent character of the malady necessitates repeated doses; in others the exhilaration and general sense of comfort induced result in repetition of the dose long after the ailment for which it was originally taken has passed away. We have also to mention the special use of the drug in connexion with ceremonies and social usages which prevails chiefly amongst the Rajputs and those who copy their customs. This use is more particularly described in the next Section of our Report, treating of opium in the Protected States. The force of example and fashion must also be taken into account in describing the motives for taking opium.

Use of opium as a domestic remedy.

61. In every part of India with which we had to deal we found witness after witness testifying to the belief in opium as the common domestic medicine of the people. It is taken in cases of specific disorders, such as rheumatism, diabetes, chill, and diarrhœa. It is regularly administered to unweaned children. In malarial and damp tracts there is general faith in its virtue, either in warding off or in curing fever.

II. 2146-7, 4095.

The use of opium as a household remedy, has a special importance in a country like India. The mass of the population is beyond the reach of European medical aid, or even of the district dispensary system. The better class of Native practitioners, the Hakims and Vaids, who follow the Arabic or Hindu systems of medicine, are only to be found in towns, and are chiefly resorted to by persons in easy circumstances. The poorer sections of the community, therefore, and especially the agricultural classes, have to prescribe for their own ailments. They have also, in the absence of

V. App. XIV.

veterinary aid, to prescribe for the ailments of their cattle, and in some parts of India, this constitutes an additional reason for keeping opium in their houses.

Use of opium in infancy.

62. As regards the administration of opium to infants, the custom is more prevalent in the north and west of India than in the east and south. Abul Fazl, in his "Institutes of Akbar," specially mentions it as being common in Malwa in the 16th century. Mothers in all ranks of life whilst nursing their children are in the habit of giving

VII. p. 32. IV. 20,285, 19,979, 21,318, 24,697.

them minute doses of opium, and in India, where the children are weaned much later than in Europe, the practice is continued up to the age of 2½ or 3 years. In some parts of the country *balagoli*, or "children's pills," containing a small amount of opium mixed with various carminatives, are used.* To account for this practice various reasons are advanced. Some assert the object to be the prevention of diarrhœa and other infantile ailments; others say that it is to correct certain properties in the milk; a third explanation, and the most common, is that by this means the child is kept quiet and the mother thus left at liberty to pursue undisturbed her domestic

II. 2299, 2757, 4291.

duties, whether in the house or field. A few witnesses, chiefly missionaries, stated before

III. 14,028, 14,628, 19,980, 21,298.

us that they believed this practice to be productive of great infant mortality. The whole of the evidence on this point has been analysed by Sir W. Roberts, and, with him, we conclude that long practice in this use of opium has resulted in the acquisition of a degree of skill in administering the drug which must materially minimise the risk of accident, so that evident injury or accidental poisoning, though not unknown, are comparatively rare. It is impossible to believe that this custom should have been handed down for many centuries amongst a people, whose general

19,529.

fondness for their children is well known, if it were as injurious as some witnesses seem to think.

Use of opium as a febrifuge.

63. In respect to the use of opium in connexion with malarial disease we have already pointed out that the relative consumption is higher in the moist and low-lying plains and valleys than in the drier and more open country. Most of the witnesses with experience of the rural tracts spoke to the popular belief in the efficacy of the drug in cases of fever, or as a protective against malarial influences.

*e.g.*, 3185, 5644, 5597-8, 6069, 6198, 10,244, 19,542, 11,686, 13,027, 27,835, &c. IV. p. 498.

* The question of the sale of *balagoli* by a licensed opium vendor was considered by the Government of Bombay, and after consulting medical authorities, it was decided that it might be continued. Such a sale is open to question, but we are of opinion that the objections to it are not sufficiently strong to justify interference.

This was confirmed by the great majority of the private medical practitioners, though many were adverse to the non-medical use of opium. On the other hand, a certain number of witnesses, generally townsfolk, denied that any such belief prevailed amongst the people. Quite apart from the merits of this belief, its existence, which is the only question now before us, has been, we consider, conclusively established by the mass of evidence of those most competent from experience and observation to represent public opinion on the subject.

*e.g.*, 2259, 2505, 5911, 9324, 9439, 9961, 26,540, &c.

64. Passing from the popular use of opium in cases of specific disorder, we have now to consider it in the more general character of a stimulant. We found that reliance upon the drug in cases of failing strength, after the age of 35 or 40 years, is widely prevalent in the parts of India where opium is commonly used. The representatives of large and influential classes, such as the merchants and landed proprietors, and a great majority of the Native medical practitioners, were unanimous in their view that though opium is not to be recommended to young men except in a strictly medical sense, or in special circumstances, it is properly used in moderation, with beneficial results, by those past middle age, who feel themselves in need of a stimulant of some sort, to serve, in the words of one of the witnesses, "as a prop to "a falling house." A considerable number of these witnesses, we may add, informed us that their opinion was founded on personal experience, as they had themselves taken opium for periods varying from 15 to 50 years, and believed that they had derived benefit from the habit. Their appearance and vigour were enough to satisfy us that, at all events, they had experienced no perceptible harm from it, and this was true of many who admitted that they were in the habit of taking what are considered even in India to be excessive daily doses.

Use of opium as a stimulant and restorative after middle age.

II. 3943, 5738.

III. 12,517, 15,914, 17,721.

23,980.

6006, 15,020,

15,888, 16,443, 16,484, 16,517, 17,837, 17,893.

65. The use of opium as a stimulant in physical emergencies seems to prevail more in the north of India, where the cold weather is comparatively severe, and in the tea-gardens and rice-growing tracts of the east, where the cultivator has to spend many consecutive hours exposed to wet and chill. The evidence from the Panjab showed that many who do not touch opium during three-fourths of the year habitually take a little during the winter months. In Assam, again, the evidence of planters showed that labourers from the hill country and settlers from Bengal take to the habit whilst resident in the Brahmaputra Valley. It was also proved before us by witnesses from various parts of India that opium is commonly taken to enable the consumer to undergo fatigue on journeys and on occasions when special exertion is required. This use of the drug was particularly mentioned by some of the military witnesses, the general purport of whose evidence is given in the next paragraph.

Use of opium in cases of fatigue and exposure.

III. 15,882, 15,963, 16,991, 18,569, 18,691.

II. 10,056, 10,167.

II. 5596, 10,038, 13,886, 14,232, 16,467, 17,662, 17,884, 21,782, 22,665, 23,750, 24,727, 24,904, 26,996, 28,115.

66. As regards the use of opium in the Native army, we heard the evidence of a number of officers, European and Native, including some in medical charge of Panjab regiments. Their evidence goes to show that the proportion of habitual consumers amongst Native soldiers is small. It is not unlikely that the number was understated in some of the regiments; since, though the men do not themselves regard the habit as reprehensible or degrading, they are aware that it is unfavourably viewed by some of the European officers. But even after making allowance for the concealment which may have been practised, the true number of habitual consumers and of men who take opium throughout the year is probably not considerable. In the first place, the great majority of men on active service do not suffer from any of the chronic or recurrent diseases for which, as we have observed above, opium is a popular remedy, nor, again, are they of an age when recourse is commonly had to opium as a stimulant or as the restorative of declining physical power. The use is more general under certain conditions of specially arduous duty or of exposure to particularly severe or malarial climate, or, again, during the two or three months of winter in the Panjab. In such circumstances it has been estimated that from 50 to 80 per cent. of the Sikh soldiers take opium, though the habit is abandoned on the cessation of the special conditions which gave rise to it. The weight of the evidence which we have to guide us on this point distinctly supports the view that the number of soldiers who take opium to an extent which does them harm is quite insignificant; that the consumption of the drug in the Native army is not attended by any perceptibly injurious results, and is often beneficial, and that any attempt to limit the consumption, as, for instance, by requiring soldiers to register themselves as consumers, would be highly unpopular. A question was raised before us as to the issue of opium to Native soldiers as a free ration when the regiment is on field service. No system of this kind is in force. The men ordinarily make their own arrangements, but a supply of opium

Use of opium in the Native army.

III. 18,654, 18,713–4.

III. 12,910, 12,935, 14,117, 14,184, 15,753, 15,879, 16,443.

17,007, 17,029, 18,641, 17,595–99.

III. 15,792, 16,946, 17,020, 17,045, 17,059, 17,096, 17,137, 17,571, 19,197.

16,960, 17,065, 17,090, 18,646, 18,706.

III. 14,222, 14,157, 17,081, 17,561, 19 164.

II. 3406.

III. 14,126, 14,134, 15,759–62, 15,926, 17,144, 17,598, 17,826.

is sometimes taken as a reserve in the regimental canteen and sold to consumers on the same footing as other luxuries or as extra provisions. The Commissariat, also, sometimes takes a supply on field service, upon which Commanding officers can indent up to a limited quantity on payment of a specially high rate. Occasionally opium is issued on the advice of a medical officer in special circumstances, as was the case when troops were employed in fighting and road-making amongst the snowy ranges of Sikkim. It has been issued, also, by State engineers to Pioneer regiments engaged in railway construction on the north-west frontier of India.

Use of opium as an aphrodisiac.

II. 2593, 2757, 8637, 9397, and p. 314. III. 14,687, 15,672, 19,903–4. 3464, 3802, 20,286, 20,310, 25,951.

67. Some witnesses stated before us that the most common reason with Natives of India for taking opium is the belief in its power as an aphrodisiac. Many drugs have this reputation with Oriental races, and opium, no doubt, is included amongst them; but the conclusion we have reached is that in India, as a whole, this motive for taking opium is exceptional, though it may be common in some large towns. The subject is examined at length by Sir W. Roberts in his Memorandum.

Use of opium by women.

8455, 8519. 10,038. 20,168, 20,278, 24,118.

68. The evidence as to the extent of the consumption of opium by women was not very clear, and the special position of women in India, no doubt, renders it difficult to ascertain the real facts regarding their habits. There is reason to believe that the drug is taken, as a restorative, after middle age, among Muhammedan ladies in Oudh and Bengal, and also to some extent among the lower classes of society in various parts of the country. On the whole, however, the consumption of opium by women, except in connexion with medical needs may be said to be of a restricted character, the custom of the country being generally opposed to the use of any stimulant by them.

Effects of the use of opium.

II, 4286, 5832, 9321. III. 13,050, 13,996, 14,517, 15,666, 16,775. IV. 23,520, 24,238, 27,202, 27,339, 27,282. II. 2363, 9157, 9541. III. 15, 547, 16,718, 19,073.

69. We have next to consider the physical and moral effects upon the consumers of the use of opium in the various ways already described. As to excessive consumption causing harm there is no difference of opinion. The material question, therefore, is how far moderation can be observed in practice. It was stated by some witnesses that little or no distinction can be drawn between moderation and excess; that excess necessarily follows the habitual use of opium, and that it is inevitably attended with injurious results, though they may be less apparent in the case of those who are able to afford what is considered by Natives of India to be a rich diet than in the case of consumers among the poorer classes. These witnesses also relied on certain terms of disparagement, literally translated by the word "opium-eater," as showing the popular estimation in which the habit is held. It appears, however, from the evidence of the bulk of the educated and representative witnesses, that these terms, in their ordinary acceptation, are applied only to those who take opium in excess. A parallel to this may be found in the use of the phrase "he drinks" in this country, as applied to persons who take alcohol in excess. Looking to the whole evidence, we find a marked preponderance on the side of the view that the common use of opium in India is a moderate use leading to no evident ill effects. This is the view generally expressed by Natives of the country holding responsible positions in life, and by the medical witnesses, and is confirmed by the statements of individual consumers, to which we have already referred. We had, for instance, Mahomedan and Rajput gentlemen from Northern and Central India, and numerous representatives of the Sikh landowners and peasantry, many of them far advanced in years and of fine manly bearing, coming forward, one after another, to testify to their habitual use of opium over long periods, and to the benefits which they believed themselves to derive from it. Among the Sikh community in particular, which is almost entirely agricultural, the habit of opium-eating is widely diffused. This community is distinguished for hard work, energy, and thrift, and these characteristics exist side by side with the opium habit. On this point we desire to quote the evidence of Dr. H. Martyn Clark, a medical missionary of the Church Missionary Society, who has had 13 years' experience at Amritsar, the head-quarters of the Sikh religion. Speaking of the effects of the habitual use of opium on the people of the Punjab, and especially on the Sikhs, Dr. Clark said:—

III. 17,133, 16,515, 16,443, 16,483, 17,053, 17,710 17,837–40, 17,893, 18,912.

III. 16,902.

"In a certain proportion of cases the people begin to lose flesh and waste; they become dyspeptic. But in another, and I am bound to say conscientiously, the great majority of cases, no such results appear. While it does not do any good, it does not appear to do the slightest harm. The people who use it are hale and hearty, fit for work and exposure, and the habit seems to interfere neither with their longevity nor their health."

. . . . .

"In my experience the effects of opium-eating on the mental and moral condition of the people are also curious. In some instances I have noted a decided deterioration when opium-eating was commenced. The

person seemed to become shifty and unreliable. But in the vast majority of cases I have seen absolutely no prejudicial effects upon the mental or moral character of the person." . . . .

I have never noticed the train of moral evils that are referred to as a result of the opium habit by a certain section of people, such as neglect of home, of children, of business, ruin of families, and so forth. I believe practically such things are simply unknown in the Punjab. After the most careful inquiry I have been only able to hear of one case in which a man had brought his family to ruin through the torpor induced by excessive quantities of opium. You can have no set of peasantry hardier, thriftier, and more careful than our Punjab peasantry, . . . . and yet among this class you will find an immense number of opium-eaters."

These views receive support from the statements of another medical missionary, the Rev. F. T. Newton, who has had long experience in the Ferozepur district, from those of several settlement officers who have been brought into specially close relations with the people of the rural tracts, and in short by the whole weight of the evidence in the Punjab. Only one Sikh witness expressed an opposite view to that of his fellows, and he was a small shopkeeper in Lahore and himself an opium-eater. Another section of the community among whom the habit of opium-eating is generally prevalent is that of the Marwaris, a class of traders. We had evidence from many parts of India to the effect that they are shrewd, enterprising, and successful in commerce, and that their use of opium does not cause any loss of intelligence or business capacity. One or two general observations should be added. Persons addicted to the opium-habit, except in the strictest moderation, are unable to continue their labours effectively without their periodical dose, and it is generally admitted that the habit, once acquired, is difficult to abandon if it has been carried to any excess.

17,153, 17,199–201, 17,351–5, 17,996, 18,455–6.

I. 1112–14. II. 2667–8, 3780–1, 6048–51. III. 19,527, 19,898. IV. 26,026, 27,567, 28,916.

70. As to the general prevalence of moderation, we have evidence of great weight in corroboration of that of the majority of Native witnesses from men of long experience in the country as employers of labour, or in responsible charge of establishments of Native subordinates. Such men are brought into close and direct contact with large numbers of Natives of various classes, both clerical and industrial. They are personally concerned with or responsible for the efficiency of their staff. It is impossible, therefore, that a habit fraught with the evil consequences attributed to it by the minority of our witnesses could escape notice, and, considering the abundance of material for recruitment, it is equally certain that discovery would be followed by dismissal. We have strong evidence accordingly in favour of the moderation of the consumer and of his general immunity from any evident ill-effects caused by the habit in the statement of many of the higher officials of the Government, that in a long service the effects of habitual indulgence in opium on the part of their subordinates had never come to their notice as a reason for dismissal or degradation, though the effects of alcohol had often forced themselves on their attention in this respect. Similar evidence is given by medical officers of experience, both regarding their own subordinates and the men examined by them on behalf of large railway companies and emigration agencies in Calcutta. In regard to this point we may remark that, as the whole of the lower and 97 per cent. of the upper grades of the public service are occupied by Natives of India,* the field of observation is wide enough for ample generalisation. To the evidence of officials we must add that of the important class of planters and mill-owners, to the general effect that they had never to dismiss a hand for excess in opium-taking, though some of them were aware that a proportion of their men indulged in the habit, and almost all of them spoke of alcoholic excess as a constant source of trouble. We may quote, in conclusion, the evidence of the actuary of the largest Insurance company in India doing business in Native and European lives, to the effect that after 20 years' experience, the company had decided that it was not necessary to impose any extra premium on the lives of moderate opium consumers.

Evidence of employers of labour, and of officials as to moderation.

II. 2054, 3183, 3264, 3528, 5174–5. III. 10,782, 10,818, 13,684, 14,794–5, 15,737, 17,244, 18,144–5.

II. 3567, 5800–3, 6905, 7190, 7916. III. 12,347, 13,979, 19,492–508. IV. 22,800, 25,134, 26,696.

IV. 24,682, 24,943. II. 3810, 3,617.

71. Our conclusions, therefore, are that the use of opium among the people of India in British Provinces is, as a rule, a moderate use, and that excess is exceptional, and condemned by public opinion. Moderation, no doubt, is a relative term, and its limits may vary largely in the case of individual consumers. In some localities, also, and among certain classes of the community, there may be a tendency towards excess that is not found elsewhere. But, looking to broad results, we are satisfied that the general use of opium, which may properly be described as moderate, is not attended by injurious consequences. In many parts of the country the number of those who take opium constitutes a very small proportion of the entire population, and we have no hesitation in saying that no extended physical and moral degradation is caused by the habit.

Conclusions as to the effects of the use of opium.

* Public Service Commission Report (C. 5227 of 1888), p. 60

## Evils alleged to Result from the Present System of Opium Supply.

72. In connexion with the general question of the effects of the consumption of opium, we have to consider certain special results which some of the witnesses attributed to the present system on which opium is procurable by the Indian public.

Suicide by opium.

2605, 2680–7, 4368–75, 4293, 8,985, 11,468, 27,861, 13,114.

V. p. 132.

73. It is stated, for instance, that owing to the alleged ease with which the drug can be obtained, opium has come to be extensively used as a means of committing suicide. As a rule, the information on which this assertion is based appears to have been from vague report. One or two witnesses, however, quoted statistics in support of their opinion. We procured, accordingly, from the Government of India a return of the number of suicides due to opium, which is included in our Proceedings. This comprises all cases in which inquests have been held, and the law, as in England, prescribes a formal inquiry and report on the occurrence of any sudden or suspicious death. Other cases of suicide may occur, and, as was stated before us, may be hushed up, but these are necessarily insusceptible of proof; nor is there any reason to believe that the desire of concealment is stronger in the case of opium poisoning than where the more common methods of drowning, hanging, or use of arsenic, dhatura, or other easily procured poisons are adopted. In relation to the total population, the prevalence of suicide in India is not large compared with European countries, nor is there evidence that where opium is used for this purpose the ratio is higher than where other means are used. The subject has been discussed in greater detail by Sir W. Roberts in his Memorandum, and we only think it necessary to say that, so far as the evidence goes, we do not find that opium is to be credited with any special prominence in the history of these unfortunate occurrences.

IV. p. 453, 5952, 13,063, 26,369.

Opium in relation to insanity.

74. It has been stated again that the use of opium is one of the causes of insanity in India. Regarding this point we have first to observe that one of the most noteworthy features in the last census of infirmities, which was taken in 1891, is the freedom of the population from insanity, as compared with the prevalence of mental disorder in European countries. In India we find three males and two females mentally unsound in 10,000 of each sex, whilst in England the corresponding figures were 32 and 35; in Scotland 38 and 37, and in Ireland, 47 and 43. In the United States of America the proportions in 1890 were 33 and 31; and in Austria 24 and 19. Then, again, the local distribution of this disorder in India shows that a very large proportion is attributable to the cretinism that seems to affect the inhabitants of some of the hill tracts and of the valleys of certain streams, as it is found to do in Switzerland and other countries. The serial order of the provinces in respect to the prevalence of insanity, to look at the question from another point of view, is by no means in correspondence with that in which they are ranged in relation to the average consumption of opium; nor, moreover, does the distribution by age or sex of the persons thus afflicted establish any link between insanity and the use of that drug. It is to be noted, first, that mental disease amongst males attains its maximum at the time when, according to the bulk of the evidence given before us, the habit of taking opium is only, as a rule, beginning. It is also found that the women who are of unsound mind bear a steadily increasing proportion to the men similarly afflicted, from middle life onwards. This rule obtains notwithstanding that the women do not, as a general practice, take opium. The case would certainly be reversed if opium were a predominating or influential cause of insanity. The statistics from the various lunatic asylums in India, and the evidence given by the medical officers in charge fully corroborate the view that the number of cases in which insanity is traceable to the use of opium is insignificant. In the chief asylum in Oudh, only eight out of 393 admissions were recorded in the five years preceding our inquiry. In Bareli, again, only three had occurred in four years. In Agra, one case, and that a doubtful one, in eight years. The Superintendent of the Bombay Asylum found only three cases in 11 years. The most complete evidence on the subject is that given by Surgeon Lieut.-Col. Crombie, who quoted statistics of the Bengal asylums for 10 years, showing that during that period, of 2,202 admissions, only eight were opium-eaters. The same witness also presented a valuable paper prepared by him for the Calcutta Medical Society in May 1892, in which the subject is treated in some detail, the conclusions finally drawn being that the opium habit does not pre-dispose to insanity, and that in India the only product comparable with alcohol in its tendency to unhinge the mental faculties is one prepared from hemp (*ganja*). Some of the medical witnesses, indeed, stated that it is probable

Census Reports, India, pp. 228–29.

England and Wales, pp. 76 and 90.

U.S.A. Census Bulletin.

Austrian Census Report.

II. p. 407.

III. 13,886, 14,226, 19,235.

IV. 24,786.

II. 3486–88.

II. pp. 410–421.

that opium, by calming the nerves, tended in some cases to ward off mental unsoundness. Much of the evidence of other witnesses entitled to speak with some authority on the subject was to the same effect as Dr. Crombie's, and on the whole we see no reason to doubt that the conclusions above quoted are correct.

Opium as a cause of crime.

II. 2594, 5888, 8608, 9129, 9164, 9394, 9850, 9927, 10,496. III. 11,684, 13,283. II. p. 315 (*c.*) II. 9527.

75. There was no substantial evidence of the use of opium leading to crime, except to petty pilfering by some indigent and excessive consumers in order to get the means of buying opium. The ordinary criminal statistics do not afford any direct information, as they contain no record of the motive for the crime or the influences under which it was committed. Indirectly, however, they tend to confirm the view held by the majority of the witnesses, that the opium-eater is, as a rule, a quiet, inoffensive man, not given to crime or violence as the spirit-drinker or *ganja*-smoker. For instance, in Assam the annual average admissions to gaol during the last five years were 2,696, of whom only 7 per cent. were opium-consumers. This fact has the more significance because the proportion of consumers amongst the general population in this province is abnormally high. In the North-West Provinces, again, where the towns contain an unusually large proportion of consumers, and where the population of many rural districts in which doppy cultivation is permitted, are believed to keep back a part of the produce for their own consumption, out of 26,270 prisoners at the end of October 1893 only about ¾ per cent. were consumers. But the most weighty evidence presented before us on this subject, as, indeed, is to be expected, was that of the officials who have to deal with crime as experts, and who can speak, therefore, with authority as to the side of the question regarding which returns are silent, namely, the prevailing motives of crime and the classes amongst whom criminality is most developed. We refer to the record in our Proceedings of the evidence of men of such experience as Sir John Lambert, Commissioner of Police in Calcutta; Mr. Vincent, who holds the corresponding post in Bombay; Colonel Porteous, the Inspector-General of Police in Madras, and Messrs. Monro and Lyall, who have successively filled the same office in Bengal. It is the unanimous opinion of these witnesses that the habitual consumption of opium has no perceptible influence on any form of crime.

III. 14,414, 19,749, 19,797.

II. 5080–2. IV. 26,940. 25,583.

II. 3184, 5463.

Opium as a hindrance to the spread of Christianity.

II. 2302–5, 14,026, 16,925, 21,493, 23,309, 23,329, 23,341, 23,489, 23,524. 26,349, 27,824, 27,833, 28,168.

76. We have finally to offer a few remarks upon an idea that has gained some currency, that the use of opium or the connexion of Government with its supply is a hindrance to the spread of the Christian religion in India. This view was advanced before us by several witnesses. It is, no doubt, true that in some churches there is a general rule against the admission of those who indulge in opium; in some others exclusion is practised, but at the discretion of the individual missionary; whilst in a third class no rule on the subject exists. The principal testimony in support of this view is found in the evidence given by the members of the Canadian Presbyterian Mission, and in the remarks of Bishop Thoburn, the head of the American Methodist Episcopalian Church in India. In the opinion of these witnesses, there is less susceptibility to moral and religious influence in those who consume opium, the habit being, as they think, inconsistent with a correct Christian life.

77. We may now quote the words of some who are entitled to speak with special authority on this question, and who do not hold the opinion that opium is a hindrance to the spread of Christianity. Their views were set forth in memorials addressed to Your Commission. The Metropolitan of the Church of England in India, with the Clergy of that Church, including missionaries, in Calcutta wrote as follows:—

"While there are evils in the abuse of opium, they are not sufficiently great to justify us in restricting the liberty which all men should be permitted to exercise in such matters, medical testimony seeming to show that opium used in moderation is in this country harmless, and, under certain conditions of life, distinctly beneficial." II. p. 438.

The testimony of the Bishop of Lucknow and the clergy of his diocese is to the same effect:—

"As persons who have some knowledge of missions in this country, we may add that, as far as our personal experience and our own inquiries have gone, we are of opinion that it cannot be truly said that the connexion of Government with opium has hindered the success of mission work in India. Under these circumstances we are disposed to think that a general prohibition of the use of opium in those parts of India of which we have any experience is uncalled for, and would produce greater evils than it was intended to remedy, and that Government can best serve the interests of morality, not by abolition, but by keeping a firm hand upon the production and distribution of the drug." V. p. 138.

Dr. Goethals, the Roman Catholic Archbishop of Calcutta, corroborated this view:—

"It has been urged by some that the use of opium is a serious obstacle to the success of missionary work; looking back with an experience of more than 15 years of missionary life, and having consulted II. p. 438.

several priests of longer standing in the country, I have been forced to the conclusion, as far as Catholic missions are concerned, that facts do not tally with this assertion. As representing a Church that has lasted longer than any other in India, where it has made more converts and employs more missionaries than all the other Christian sects put together, I can conscientiously affirm that, to the best of my knowledge, not a single case has fallen under my observation in which the use of opium has stood in the way of conversion to Christianity. Further, I do not remember having ever heard complaints on that subject either from my colleagues in the Indian Episcopate, or from any of the numerous missionaries whom I have met since my arrival in India."

78. In addition to these collective addresses, we received some statements of individual opinion from missionaries, or those connected with missionary effort, to which we feel bound to direct especial attention. First among these witnesses we would refer to Mr. James Monro, C.B., formerly Inspector-General of Police and subsequently Commissioner in Bengal, and, finally, Chief Commissioner of Police in London. Mr. Monro has returned to India for missionary work. In his evidence he gives the following weighty testimony.

I. 5470. "I have been for many years a member of the Corresponding Committee of the Church Missionary Society, and I have come across a good many missionaries in that connexion. I have come across a good many more since I have been here at work, but I do not recall any missionary to whom I spoke about his missionary work who ever suggested that the opium trade and the Government connexion with it in Lower Bengal formed any obstacle to his work. Since I came here I have made a point of asking all the missionaries whom I have come across, especially in the district of Nuddea, (a district that has been held by the Church Missionary Society upwards of 60 years), and not one of these missionaries has ever experienced any obstacles in his missionary work on account of the opium traffic and its results. I have worked with missionaries in other districts in the same way, and I have not as yet come across any missionary who has expressed an opinion that the opium trade did form an obstacle, or who could show me any facts which warrant any such opinion, supposing he had expressed it. . . . . As a missionary myself, in my own experience, going amongst the village districts where I am perfectly well known, and where the people would not have the slightest hesitation in talking to me, I have never heard an adverse opinion in regard to opium expressed."

The Rev. H. Lorbeer, a missionary of the German Lutheran Church, whose field of work lies at Ghazipur, one of the two head-quarters of the Opium Department states as follows, after 28 years' experience:—

III. 12,814. "I do not consider that the use of opium impedes the progress of Christianity in India. All our converts were made from opium cultivators, and some of them cultivate it still occasionally when they are in pecuniary difficulties."

From the Sikh districts in the Panjab, where the opium habit is very prevalent, there is testimony to the same effect. Dr. McKee, of the United Presbyterian Church of America, now working at Sialkot, informed us as the outcome of his 23 years' experience, that the effects of opium had not been found to stand in the way of his spiritual work in India, adding:—

III. 17,252. "The truth is, that up to the time that this subject began to be agitated in the papers, we knew little about it, because it did not affect our work at all, and the effect of it was not perceptible on the moral or physical condition of the people."

III. 17,154. Dr. Newton, a medical missionary of the same Church, and of the same length of experience in the country, who is now at Ferozpur, confirms the above view.

Dr. Henry Martyn Clark, of the Church Missionary Society, residing at Amritsar, is in charge of one of the largest medical missions in the world. After giving in detail his professional experience of the effects of the opium habit, he said:—

III. 16,902. "I should like, finally, to add, as a missionary, that opium in this country is absolutely no hindrance whatever to missionary work."

Impressed as we are with the views quoted above, we feel it our duty to express the opinion that neither the use of opium nor the Government connexion with it, is any material hindrance to missionary effort.

## Opium-smoking.

Opium smoking as practised in India.

79. We conclude this Section with a few observations on the habit of smoking preparations of opium, a habit which stands in India on a somewhat different plane from the ordinary custom of taking the drug in other forms, to which alone the preceding portion of the Section refers. There is no doubt that in Indian public opinion a broad line of distinction is drawn between the habit of eating and that of smoking opium.

*e.g.*, 2322, 5825, 11,211, 16,544, 18,624, 14,352, 22,661.

80. In the early Bengal regulations referring to opium, the use of *madak* was forbidden. *Chandu* was not mentioned, and it seems certain that the use of this preparation was introduced into India at a later date from China. An interesting account of the growth of the habit in the North-West Provinces and Oudh, where the sale of *madak* was prohibited until 1863, will be found in our Proceedings. The process of preparation and the apparatus required, tend to restrict the habit to public saloons, and the

V. p. 87.

dislike of respectable Natives to such establishments has confined the practice for the most part to low and openly dissipated classes. Smoking is, in fact, little practised in comparison with other uses of opium, and is confined chiefly to the larger towns and military cantonments. A description of the process is given by Sir W. Roberts at the end of his Memorandum. On the medical aspect of the smoking habit his conclusion is that "it cannot be said to have been adequately proved "that moderate opium-smoking, taken by itself and apart from disease or semi-"starvation, has any prejudicial effect on health." On the other hand, it was clearly shown before us that Native public opinion generally condemns the habit as disreputable, mainly, perhaps, from its associations, and this opinion is shared by the great majority of European witnesses, official and private, including the medical practitioners.

I. 5983.
III. 13,764, 6,012, 18,536, 19,593.
IV. 27,572.
II. 2322.

81. We consider it necessary, however, to point out that the relative objections to opium-smoking and opium-eating vary much in different places. The relative prevalence of the two habits seems to be a matter of national custom. In India it is the common habit to eat the drug, in China and the Far East to smoke it. The different views which may be taken of the two habits, due to local colouring, cannot be better illustrated than by the following extracts from a Despatch addressed in 1893 to Lord Ripon, as Secretary of State for the Colonies, by the Governor and the Colonial Engineer of the Straits Settlements. Sir Cecil Clementi Smith writes from Singapore :—

View taken in the Straits of opium smoking.

No. 27 dated 27th Feb. 1893.

6. * * * "I am not yet satisfied that it is advisable (to raise the maximum price of opium). There is a prospect by so doing of driving the poorer class of Chinese to eating preparations of opium containing still more deleterious substances, and it would be deplorable if, as a result of Government action, any section of the community should be induced, in order to satisfy their craving for sedatives or stimulants, to adopt the most harmful practice of eating preparations of opium, in lieu of the comparatively harmless and often beneficial practice of smoking the same drug."

Enclosure 2 in the above-quoted Despatch.

Major McCallum, R.E., the Colonial Engineer at the Straits Settlements writes :—

4. "I quite conceive that to many races in India the consumption of opium is an artifically acquired habit which is attended with serious evil, and which is a fair subject for philanthropic and legislative effort. It is the same in the Straits Settlements, where the indolent Malay cannot indulge in the habit of chandoo smoking without moral and physical deterioration. It is not for the Malay that I claim that opium is a harmless or even beneficial stimulant, but for the principal consumer in this part of the world, namely, the hard-working and thrifty Chinese coolie."

Enclosure 4 in the above.

Lastly, Mr. O'Brien, acting Auditor-General of the same Colony, writes :—

3. "Opium-eating in all its forms (including the practice of morphia injection), when once established as a habit produces an invariable bodily and mental condition which imperatively calls for a constant, if graduated, increase of the drug used."

4. "Now this is not the case with opium-smoking, and puts the practice on an entirely different platform from the other forms of abuse of opium. Chinese are opium-smokers, not opium-eaters, with exceptions so few that they may be disregarded."

82. Referring to the recent withdrawal of licenses for consumption of preparations of opium on the shop premises, there is some difference of opinion as to whether the step has tended to the decrease of the habit. The measure has been in operation too short a time to enable us to come to a definite conclusion. People now meet together on private premises for the purpose of smoking, and thereby defeat the object with which the discontinuance of licensing the shops was ordered. Unless the owner of the room or an individual smoker can be proved to have sold *chandu* or *madak*, or to be in possession of more of those preparations than the general regulations permit, no offence has been committed. Smoking on such premises is not an offence punishable under the existing law.

Recent action of the Government of India as regards opium smoking shops.
II. 4944.
IV. 24,814–17, *e.g.*, 5008, 5471.
III. 13,826, 19,568.

83. Questions have also been raised before us as to the effective carrying out of the orders issued by the Government of India between 1891 and 1893 for the prohibition of smoking on licensed premises. There may have been cases in which the holders of licenses for the sale of opium, whilst stopping consumption on their premises, have provided places in the immediate vicinity as private clubs or smoking rooms. We are of opinion, however, that having regard to the difficulty of legal proof in such cases, the Government have, to the best of their ability, enforced compliance with their orders.

II. 2765–74.
III. 19,572–90.
II. 8948, 9373, 3072.
IV. pp. 295, 301.

84. We have now set forth the evidence taken by us in connexion with the important questions of the nature and extent of the use of opium by the population of India and its effects on the consumer. In the Sixth Section of our Report we state our conclusions on the general question of prohibition except for medical purposes.

## SECTION III.

### The Production, Consumption, and Export of Opium as affecting the Protected States of India.

85. We have dealt in the preceding Section with the production and consumption of opium in British Provinces, and we now propose to consider the opium question as it affects the Protected States of India. These comprise an area of more than half a million square miles, with a population of 66 millions, as shown in the table below, being rather more than a third of the area and rather less than a fourth of the population of the whole of India. The interest of these States in the question differs materially. Those that are most vitally affected by the present inquiry are the States which produce what is known generically as Malwa opium, and which have a share in the export trade of that opium. In some other States, chiefly in the Punjab, production to a limited extent is carried on, while as regards consumption there are some marked variations, the opium habit being little known in the Protected States in the Madras Presidency. For the purposes of the present Section of our Report the Protected States will be divided into two groups, those that fall naturally under the Malwa opium system, and those which are not immediately connected with that system. Production, consumption, and export will be treated in order.

Table 7, showing the Protected States in India, with their Area and Population.

| Name of Protected States. | Area in Square Miles. | Population. |
|---|---|---|
| Hyderabad | 82,698 | 11,537,040 |
| Baroda | 8,226 | 2,415,396 |
| Mysore | 27,936 | 4,943,604 |
| Kashmir | 80,900 | 2,543,952 |
| Native States in Rajputana | 130,268 | 12,016,102 |
| Do. in Central India | 77,808 | 10,318,812 |
| Native States under the Bombay Government:— | | |
| (*a.*) In Gujarat, Kathiawar, and Cutch | 50,515 | 5,361,141 |
| (*b.*) In other parts of the Presidency | 18,530 | 2,698,157 |
| Native States in Madras | 9,609 | 3,700,622 |
| Do. in Bengal | 35,834 | 3,296,379 |
| Do. in Central Provinces | 29,435 | 2,160,511 |
| Do. in North-West Provinces | 5,109 | 792,491 |
| Do. in Punjab | 38,299 | 4,263,280 |
| | 595,167 | 66,047,487 |

### I.—*Native States under the Malwa Opium System.*

#### *Introductory.*

Meaning of the term Malwa.

86. The term Malwa has been used, in the evidence recorded by us, and in the various statements printed in the Appendices, with several different meanings, which require to be distinguished. Geographically the name belongs to the fertile table-land of Central India, which is described by Sir John Malcolm as consisting "of the level elevated "plain extending north and south from the Vindhya Mountains to the Chittore and "Mohendra range, and east and west from Bhopal to Dohad."* Within this tract, of which the district round Indore may roughly be taken as the centre, lie the important
21,867. opium-producing States of Central India, and it is to this tract, where the conditions of climate and soil are peculiarly favourable to the cultivation of the poppy, that the witnesses refer when they speak generally of the production or the consumption of opium in Malwa. The name is used by some few witnesses in a more restricted sense,
22,170. as meaning the Malwa Province of the Gwalior State, the dominions of the Maharaja
22,174. Sindhia, in contra-distinction to the other Provinces of that State which are not
22,274. situated in the larger region known as Malwa. But in its general relation to opium, the term has acquired what is practically a trade signification as covering the opium which is brought into British territory, under the pass-duty system to be described further on, whether for local consumption within that territory, or for export to China and the far East. In this sense the term includes opium produced in any of the States of Central India, whether within or without the limits of Malwa proper, opium produced in the States of Rajputana, and also opium produced in the State of Baroda.

* P. 3, Vol. I. "A Memoir of Central India, including Malwa," by Sir John Malcolm.

These, therefore, are the States which will be dealt with under this head, and also the States in Gujarat, Kathiawar, and Cutch, under the political control of the Bombay Government, which, owing to their geographical position, have been closely connected with the history and development of the Malwa trade and system.

87. The evidence regarding the Native States in Rajputana and Central India was recorded at Jeypore, Ajmere, and Indore, and we think it desirable to preface this section with a few remarks as to the course of the inquiry in those provinces. It has already been stated that the Government of India, at the request of the Commission, undertook to arrange generally for the production of evidence, and, in pursuance of this undertaking, the Native States in Rajputana and Central India were invited to express their views on the various questions affecting them, while a special officer in each province was entrusted with the duty of collecting and compiling information on the subject, so that it might be placed before us in a complete form. Each of these officers prepared and circulated to the various Native States in his province a series of general questions, which will be found in our Appendices, in order to ensure that the points on which information was required should be clearly understood, and that the whole ground which the inquiry was likely to occupy should be covered. In most of the States the methods of administration are still backward; inquiries of this nature are regarded with some jealousy and suspicion; and it was anticipated, from the experience of the past, that unless special measures were taken the subject might fail to receive adequate attention. The statistics supplied by the Native States in Rajputana were placed before us in the form of a separate summary for each State, while those from the States in Central India were compiled in several tabular statements; but the information in all cases is the information given by the States themselves, though in some instances the Central India figures have been modified by the officer charged with the compilation of the statistics, as explained by him in the introduction to the Appendix, in which they are printed. We were unable to take the evidence of all the persons offered for examination from the Native States either in support of these statistics, or as being entitled to speak with authority on various aspects of the opium question, but we recorded the statements of 64 witnesses in Rajputana, and of 41 in Central India, including those presented by the Society for the Suppression of the Opium Trade. Among the Rajputana witnesses were representatives from all the important States in that province, Native officials of high position and long experience, a number of Rajput nobles and landowners, and various members of the Mahajan or commercial class, which, both socially and by reason of its wealth and numbers, forms an important part of the community in Rajputana. In Central India we received direct communications from the Maharaja Holkar of Indore, from the Nawab Shah Jehan Begam of Bhopal, and from the Mahomedan Ruler of Jaora; we recorded the evidence of a group of witnesses from the Gwalior and Indore States, which have the largest stake in the opium trade, and of representatives of all the chief opium-producing States, with one or two exceptions. Many of these witnesses are highly educated men holding responsible offices in the States which they represent, while others speak with the knowledge of a lifetime on a subject of the gravest importance to these States. We are satisfied, therefore, that we have been placed in full possession of the views of the Protected States in Rajputana and Central India on the opium question, and that, subject to certain inevitable limitations, we have ascertained the material facts regarding the production, consumption, and export of Malwa opium. On the part of the Society for the Suppression of the Opium Trade the evidence given before us in these provinces was of a limited character. In Rajputana four witnesses were produced at Jeypore, whom we cannot regard as being entitled to any weight, while at Ajmere we recorded the statements of a medical missionary, Dr. Huntly, who did not go so far as to advocate the prohibition of opium, except for medical purposes, by law, and of a lady Zenana missionary, both belonging to the United Presbyterian Mission, and also of two missionaries of the Methodist Episcopalian Mission, an American body. It should be added, however, that the evidence of Dr. Valentine, the principal of the Medical Missionary College at Agra, which was given at that place, related mainly to his experience in Rajputana. In Central India a group of witnesses came before us at Indore from the Canadian Presbyterian Mission, including four missionaries, two medical missionaries, two schoolmasters, and two catechists. There was also a European shopkeeper from Mhow.

Course of present inquiry in Rajputana and Central India, and general character of evidence.

IV. App. IV., App. X.

IV. 21,868.

IV. App. VI. IV. App. XI.

IV. pp. 14, 15. 21,349. 21,352.

88. The evidence regarding Baroda and other Native States under the political control of the Bombay Government in Gujarat and Kathiawar was recorded at Ahmedabad, and two witnesses* who spoke with authority regarding Cutch appeared before us in

Present inquiry regarding Baroda and

* IV., pp. 225-228; IV., pp. 292-294.

States in Gujarat, Kathiawar, &c.

Bombay. The States in Gujarat and Kathiawar are very numerous, and most of them are grouped under Agencies as shown in the table below, the Kathiawar Agency, in particular, comprising a congeries of States, chiefly of Rajput origin, which vary very much in size and importance. Baroda was represented by two Native and by two English officials, the first of whom had been lent to the service of the State, while the second was in political charge of the Baroda districts in Kathiawar. Representatives of 16 Kathiawar States, including Bhaunagar, Morvi, Gondal, and the Mahomedan State of Junagadh were examined, and we have every reason to believe that we have obtained a genuine expression of the views of the Chiefs.

TABLE 8, showing the NATIVE STATES in GUJARAT, KATHIAWAR, and CUTCH, with their AREA and POPULATION.

| Name of State. | Area in Square Miles. | Population. |
|---|---|---|
| i. States in Gujarat:— | | |
| (*a.*) Cambay | 350 | 89,722 |
| (*b.*) States in the Palanpur Agency | 7,775 | 645,526 |
| (*c.*) States in the Mahi Kantha Agency | 9,300 | 581,568 |
| (*d.*) States in the Rewa Kantha Agency | 4,980 | 733,506 |
| (*e.*) States in the Surat agency | 1,051 | 181,208 |
| ii. States in Kathiawar | 20,559 | 2,752,104 |
| iii. Cutch | 6,500 | 558,415 |
| Total | 50,515 | 5,542,349 |

*Historical Retrospect.*

Connexion of Mahomedans with Malwa, and early Native trade in Malwa opium.

89. The first point in connexion with the Malwa opium trade to which our attention has been directed by Your Majesty is "the nature of the existing arrangements with "the Native States with regard to the transit of opium through British territory." For the full understanding of these arrangements, a short historical account of this part of the subject appears to be necessary, and we, therefore, proceed to give this.

The tract of country called Malwa was first conquered by the Mahomedans at the beginning of the fourteenth century, and towards the end of the same century the Musalman Governor of this region threw off his allegiance to the central authority, and established an independent Kingdom of Malwa under the Ghori dynasty. In 1526 this dynasty was overthrown by Bahadur Shah of Gujarat, and for some few years Malwa formed a part of the Gujarat Kingdom. It subsequently became the scene of successive revolutions, until it was finally conquered by the Emperor Akbar, shortly before the Gujarat Kingdom was reduced to subjection by him in 1570. Malwa was then made a Province of the Delhi Empire. With the sixteenth century the Nations on the western sea-board of Europe entered the field of Eastern commerce in succession to Venice and the Mediterranean cities, and the accounts given by various European travellers and writers during this century clearly show that there was an established Native trade in opium from the West Coast of India with China, Malacca, and other places as early as the beginning of the century. Extracts from their writings are given at some length in a special note appended to our Report, and it will be seen that they speak of opium as coming chiefly from Cambay or the Kingdom of Cambay, and as being a regular article of trade at the port of Cambay. For the greater part of this period Cambay was included in the Kingdom of Gujarat to which these writers, no doubt, refer, and it seems certain that the opium spoken of was actually produced in Malwa, which geographically and by the course of its history was closely associated with the Gujarat Kingdom, and for some years had formed an integral part of it. As already stated, Malwa was incorporated in the Delhi Empire about 1570, and in the Ain-i-Akbari, or Institutes of Akbar, compiled by Abul Fazl in 1590, opium is recorded as a staple product of the Malwa Province,* and one that had attained special excellence in that region.

VII.pp.30–2.

Connexion of the Portuguese with the Malwa opium trade, during the 16th, 17th, and 18th centuries.

90. The special position occupied by the Portuguese in the history of the Malwa opium trade deserves separate mention. Early in the sixteenth century they acquired Goa,† and some few years later they planted fortified settlements on the upper line of

* The Malwa Province of the Moghul Empire included a part of Rajputana, and also the territory, outside Malwa proper, now comprised within the Central India Agency.

† Goa was finally captured by Albuquerque in 1510, while Daman was conquered in 1530 and Diu obtained in 1535. *See* pages 211, 400, and 417, Vol. I., "The Portuguese in India," by F. C. Danvers, 1894.

the West Coast of India, at Daman, about 100 miles north of Bombay, and at Diu, an island at the southern extremity of the Kathiawar peninsula, two ports which may be said to face each other across the entrance to the Gulf of Cambay. During the greater part of this century the Portuguese held a marked supremacy in Eastern commerce, a supremacy which, according to the writers already mentioned, was fully recognised at Cambay. From an early date they acquired a large share in the opium trade from the West of India to the far East, where they established themselves at Malacca, and later at Macao, situated on an island in the estuary of the Canton River. Towards the end of the century they were losing the predominance in Eastern commerce, to which, during the seventeenth century, the Dutch succeeded for a time; but they appear to have always maintained their connexion with the Malwa opium trade to the far East; and Daman and Diu, on account of their situation with reference to Malwa, played an important part in this trade well into the present century. Of the actual extent of the trade during the seventeenth and eighteenth centuries not much is known, but that it was by no means confined to the Portuguese and Dutch was established by the inquiry made by the Government of India at the beginning of the present century, which will be dealt with in the next paragraph. The only other matter that requires notice before passing on to the results of this inquiry is that, on the breaking up of the Delhi Empire, which began towards the end of the seventeenth century, Malwa passed into the possession of the Marathas.

Result of inquiries into Malwa opium trade at beginning of present century.

91. At the beginning of the present century the attention of the Government of India was directed to the trade in opium from the West of India, of which little or nothing then seemed to be known at Calcutta. The Bombay Government was therefore requested to have a full inquiry made into the origin, circumstances, and course of this trade, as there was reason to fear that it would injuriously affect the revenue derived from the monopoly of opium in Bengal. The inquiry showed that in the Company's own territories, and also in the Native States, in the Bombay Presidency, a considerable internal and external trade was being carried on in opium coming from Malwa. As to the origin of this trade nothing very definite was ascertained, but as to its antiquity the evidence from all sources was unanimous. The Bombay Customs Master reported, in a letter dated the 22nd November 1803, that it was a generally received opinion among the Native merchants that the trade had existed for centuries back, while the Collector of Surat, writing in September of the same year, stated that from information obtained from the oldest and most respectable merchants of that city as well as from the Custom House records it appeared that "opium has been an article of traffic ever "since Surat has been a place of trade from time immemorial." The Malwa opium was said to be exported by sea to Arabia and Persia from the ports of Kathiawar, and to the Malay Coast and China, as well as to Malabar and other places in India, from the Company's port of Surat, while Cambay, Jambusar, and Broach were also mentioned as places to which opium was sent for export from the interior. The inquiry further made it clear that the habit of consuming opium was widely prevalent, especially in Gujarat, including Baroda and other Native States, as well as British territory, though the actual cultivation of the poppy in this part of the country was reported to be very limited in extent.

VII. pp. 46, 47, and 48.

Measures taken to prevent competition of Malwa opium with Bengal opium.

92. With a view to prevent injury to the revenue derived from the Bengal monopoly, the cultivation of the poppy was prohibited in 1803 throughout the Company's territories in the Bombay Presidency. These were at that time very limited in extent, and the importation into them of opium, other than Bengal opium, was forbidden. Orders were also issued, which were finally clothed with legislative sanction by Bombay Regulation I., of 1805, prohibiting the shipment at British or foreign ports in India of any opium except Bengal opium, in vessels sailing under the British flag. At the same time it was arranged, with the acquiescence of the Gaekwar of Baroda, that the cultivation of the poppy in his State should be forbidden, but this arrangement was modified at the end of 1805. The Court of Directors appear to have understood from the papers on the subject that the opium actually consumed within the Company's territories in the Bombay Presidency was produced locally, and they, therefore, expressed an opinion that in view of the general diffusion of the opium habit, the prohibition of poppy cultivation would be a harsh measure. In the result, the prohibition already issued throughout the Company's territories was allowed to remain in force, but as regards the Baroda State the cultivation of the poppy was not actually interfered with. The main policy, however, appears to have been to prevent the Malwa opium from reaching the sea by arrangements with the intervening Native States, and with

VII. pp. 48, 49.

this object in view special engagements were entered into with the Chiefs of the Mahi Kantha Agency in Gujarat, in 1812, and a few years later with the Gaekwar.

For some years the export of Malwa opium appears to have been considerably checked. This was due, in the first place to the exhausted condition of Malwa after the Maratha civil war in that country at the end of the 18th century. It was also due in part to the measures already described and in part to the acquisition by the Company in 1804 of a belt of territory along the Gujarat coast, which enabled a more direct control to be maintained over the passage of opium from Malwa to the sea, and over its introduction into the Portuguese ports of Daman and Diu. There are also grounds for believing that the Portuguese themselves, who were receiving British assistance in Europe for the defence of their liberty against the French, prohibited for a time the export of Malwa opium from their Indian ports as the result of arrangements made with their Viceroy of Goa by the Marquis Wellesley.

VII. p. 49.

Policy of purchasing Malwa opium for the China market and its failure.

93. As early as 1815, however, it became apparent that Malwa opium was again being exported in considerable quantities. Several circumstances contributed to this result. The demand for opium in China was increasing, while the supply from Bengal was kept low. The arrangements with the Portuguese proved to be of only temporary efficacy, and indeed their commercial interests in the East were so largely bound up with the opium trade that it was not to be expected that they should long forego their share in this traffic. The Malwa produce, therefore, found its way to Daman and Diu partly by smuggling through Gujarat and partly by circuitous routes, the chief of which was through Marwar, Jaisalmir and Sind to the port of Karachi, from which place it was shipped to Daman. It should be added that British supremacy was established in Malwa at the close of the Pindari war in 1818, and the pacification of the country was naturally followed, under the conditions which have been described, by a large increase in the production of opium. When, therefore, in that year the Government of India was first brought into direct political relations with the Native States of Malwa, they found it necessary to take into serious consideration the rivalry of the Malwa opium with the Bengal product. Being still bent on securing a monopoly of the sale of the whole of the Indian opium for the export trade, mainly with the object of maintaining the price of the Bengal opium, they decided, though not without some hesitation, on purchasing yearly in Malwa a limited quantity of opium, fixed with reference to the existing China demand at 4,000 chests, in order to enable them to control the China market.

VII. p. 53.

It was thought that, with the advantage of a direct and comparatively cheap transit to Bombay, a Government agent would be in a better position than any other purchaser, and so able to secure the greater part of the Malwa produce. Arrangements were, therefore, made for the regular purchase of opium in Malwa, and in 1821 an opium agent, with head-quarters at Indore, was appointed for this purpose. The system, however, did not prove a success. At first purchases were made recklessly, as the agent seems to have thought that he must outbid private traders, and the result of his attempting to do this in a free market was the payment of extravagant prices, and also a temporary stimulation* of the production of opium. These proceedings were not approved by the Government, and it was realised that the control of the China market could not be secured in this way.

Treaty arrangements for direct restriction of production of Malwa opium.

94. A change in system was then decided on in July 1823 with a view to place direct restriction on the production of opium in Malwa and the adjoining country. The Government of India undertook to purchase yearly from the opium-producing States in Rajputana and Central India a specified quantity of the drug at a stated price, on their agreeing to confine the cultivation of the poppy within an area calculated to produce this quantity of opium with a certain additional amount for the consumption of their own subjects, and on their undertaking to prevent, to the best of their ability, the export of opium from their territories. Accordingly in 1824 and the following years a number† of Treaties, containing provisions of this nature, were negotiated with various States in Rajputana and Central India, but the Maharaja Sindhia, Jeypore, Kishengarh, and Bhopal were unwilling to enter into any such engagements. In pursuance of the same policy Treaties were negotiated with Udaipur, through which lay the direct route to the West Coast, and with several other States in Rajputana for the

VII.pp.55–6.

* Evidence of Mr. Swinton before the Select Committee of the House of Lords upon the affairs of the East India Company, 1830.

† One of these Treaties is given at pages 56 and 57 of App. B. of Vol. VII. of our Report, from Aitchison's Treaties, 3rd edition, Vol. IV., pages 174–176.

prevention of the transit of opium through their limits. This system remained in force until 1829. From the first it was most unpopular, and it was found that any real limitation in the area of poppy cultivation was impracticable. Accordingly, a large clandestine trade in smuggled opium grew up. Smuggling by the more direct routes to the West Coast was kept in some check by the command of the immediate littoral acquired by the Company in 1804, by the arrangements made with Baroda and the other Native States of Gujarat, and by the establishment in 1820 of British supremacy in Kathiawar and Cutch. But Sind was still an independent kingdom, and large quantities of opium were conveyed by the indirect route already established from Malwa, through Pali in Marwar and Jaisalmir, to the Port of Karachi in Sind, and thence shipped to Diu and Daman. The extent to which this route was used at this time may be gathered from the fact that Sir John Malcolm estimated that 10,000 chests of smuggled opium reached Daman in one year,* while Mr. Stark, chief of the Revenue Department in the India Board, stated in evidence before the Select Committee of the House of Commons, which reported in 1832 on the affairs of the East India Company, that the opium smuggled from Malwa to Daman amounted in one year to 9,000 or 10,000 chests.

Reasons for abandonment of direct restriction of production in Malwa.

95. It was, therefore, determined by the Government of India that the restrictive system should be abandoned, and we think it desirable that the reasons for this determination, as given at the time by the Governor-General, Lord William Bentinck, in Council, should be quoted here at length :—

† "Although some difference of opinion exists among the authorities employed in Malwa and Rajputana regarding the practical effect of the opium Treaties upon the prosperity of the country at large and the feelings with which they are viewed by the Native Princes; the general tenor of the evidence now before Government leads irresistibly to the inference that evils of a very serious nature are inflicted by our monopoly system in Central India on all who fall within the sphere of its operation. It has been found altogether unpracticable to enforce that part of the original scheme which contemplated a positive reduction of the quantity of the poppy cultivation, and we have therefore determined to abstain from any direct interference with the production of the article and have instructed the local authorities accordingly.

"Nearly all our agents concur in representing that our measures for controlling the transit and exportation of Malwa opium are vexatious and oppressive to the people, unpalatable and offensive to their rulers; whilst we have abundant proof of their imperfect efficacy in the continually increasing prevalence of smuggling, and the yearly augmentation of the export of the drug from Diu and Daman to the China market. The intervention of Sindia's scattered and extensive possessions, which it has been found impossible to include in the general arrangement, would alone defeat our hopes of preventing the escape of contraband opium in considerable quantities from Central India. And further the temptations to smuggling are so powerful, the pursuit of the illicit traffic is so congenial to the tastes and habits of the wild tribes and dissolute adventurers who abound in Malwa, and the public sentiment is necessarily so hostile to our monopoly that it may reasonably be doubted whether the Native States, however well disposed to co-operate and anxious to fulfil their engagements, are strong enough to carry the system into complete effect either with or without the constant and minute interference of our local agents. In the meantime there is reason to fear that the repeated and desperate efforts made to pass the opium beyond the limits of our restrictions by large armed bands of smugglers, and their open systematic defiance of the local authorities whilst engaged in the enterprise, are operating to demoralise and disorganise the country, and to revive the ferocious and turbulent habits of the Meenahs and other uncivilised tribes in a degree which demands the most serious consideration . . . . Impressed with this view of the subject, and being quite unable to devise any middle course of procedure which affords the promise of satisfactory results, his Lordship in Council cannot avoid the conclusion that we are bound by paramount considerations of justice and good faith to withdraw altogether from interference with the growth and transit of opium throughout Central India, confining our restrictions upon expertation to our own territories and to Gujarat, Kattywar (Kathiawar), and Cutch, where the prohibition should still be maintained by the Bombay Government, as it appears from the communications of the Honourable the Governor in Council that no injury and discontent are produced by our arrangements, which have been in force for many years in that quarter."

Recognition of the Malwa export trade and introduction of the passduty, or Malwa, system.

96. Finally in July 1830 the Government of India decided on formally recognising the Malwa opium trade, and on allowing the direct passage of Malwa opium to Bombay for export by sea under a system of passes and on payment of a fee or duty. This was the origin of the pass duty, or Malwa, system, which is in force at the present time. The object at first in view in assessing the duty was to secure that the cost of the opium as put down in Bombay by the direct route through British territory should not exceed the cost involved in its conveyance to the coast by the cheapest of the more circuitous routes through Native State territory, and the duty was fixed at Rs. 175 a chest. Five years later the duty was reduced to Rs. 120 a chest, because the opium

* Paragraph 5 of Letter from the Governor General in Council in Bengal to the Court of Directors, dated the 21st September 1830, in Appendix IV. to the Report of the Select Committee of the House of Commons, dated the 11th October 1831.

† Resolution of the Governor-General in Council in the Political Department, dated the 12th June 1829, in Appendix IV. to the Report of the Select Committee of the House of Commons, dated the 11th October 1831.

IV. p. 456. shipments from Bombay in 1834 had largely fallen off, while those from Daman had increased. But in 1843 Sind was conquered, and the chief route by which Malwa opium reached Daman was thus closed. The duty was then raised to Rs. 200 a chest, and since that date has been raised on various occasions until it reached Rs. 700 a chest in 1879. In 1883 the duty was reduced to Rs. 650 a chest, and at the time of our inquiry stood at Rs. 600 a chest.* This opium cannot legally be brought into British territory, whether for consumption in British India or for export to China, except on payment of the duty in force for the time being, and by certain fixed routes. For the levy of this duty scales have been established, in the charge of Government officials, at convenient centres, and the opium, after being weighed, is allowed to be forwarded
II. p. 317. under cover of a pass and with special precautions by one of the prescribed routes. According to the old-established custom of the trade the chest of Malwa opium contains 140 lbs. in weight, to which an allowance of 4 oz. is added for leaf and dust, making a total of 140¼ lbs., and for convenience of carriage the
IV. p. 456. manufactured drug is usually packed in half chests containing 70⅛ lbs. The existing scales are at Ajmer, under the management of the Commissioner of Ajmer and Merwara, at Indore and the eight other places named in the margin, under the administrative control of the Agent to the Governor-General Central India, and at Ahmedabad under that of the Government of Bombay. At the present time the Ajmer scales are only used for the weighment of the opium that goes to the Punjab for local consumption there, while the Ahmedabad scales are chiefly used for Baroda-grown opium when sent to Bombay for foreign export. Under this system, therefore, the Government of India has nothing to do with the production of Malwa opium, and has no direct concern with the export trade.

Rutlam. Dhar. Ujjain. Udaipur. Chittore. Jaora. Bhopal. Mandsaur.

IV. p. 404.

97. On the introduction of the pass-duty system the various engagements in force with the protected States in Rajputana and Central India were abrogated, and, so far as they are concerned, there has been no change in the position of affairs since that time. The only subsequent agreements with these States, relating in any way to opium, are certain agreements entered into in 1878–79 with five Rajputana and three Central India States, on the occasion of the abolition of what was known as the Customs line or hedge. The salt duty, before 1878, was higher in Bengal than in Western and Southern India, and the main object of this line, which was regularly patrolled, was to prevent the smuggling of salt into Upper India. In that year, however, the salt tax was equalised throughout the country, and the agreements with the States in question, which bordered on British territory, were intended to secure that opium should not be exported by any of the routes, or in any of the directions
II. p. 359. that had previously been barred by the Customs line.

Whether Government policy has led to extension of poppy cultivation in Native States.

98. It will be convenient, therefore, at this place to deal with a statement, concerning the Malwa trade, which will be found in the eighth paragraph of a Memorial presented to the Secretary of State for India, Lord Kimberley, in November 1892, by the Society for the Suppression of the Opium Trade, which was placed before us as containing, in brief, the case of that Society against the opium trade. It is asserted in that paragraph that "the "present wide extension of poppy cultivation in the Native States is due to the policy "of the British Government itself," and, in support of this assertion, a statement made in 1829 by Mr. St. George Tucker, who was at that time a Director of the East India Company, is relied upon, to the effect that the Government of India "contracted "burdensome Treaties with the Rajput States to introduce and extend the cultivation "of the poppy." This statement is undoubtedly erroneous. It can only have been intended to apply to the Rajput States in Rajputana and Central India, and the examination of the early relations with those States has made it clear that no such Treaties were ever concluded with them, nor, for that matter, were any Treaties, with the object mentioned, ever contracted with any Rajput States. So far, therefore, as the assertion in this Memorial is based upon Mr. St. George Tucker's statement, it is based upon a misapprehension of the facts. It is true that, while the system of free purchase of Malwa opium was in force, disproportionate prices, as also stated by Mr. Tucker, were paid for the produce, but this system did not survive for quite two years (1821–23), and the payment of these prices was the individual act of the opium agent, and entirely opposed to the intention of the Government of India. The subsequent

I. p. 162. II. 2398. II. 2495 to 2501. IV. 21,811.

* The duty was raised in December 1894 to Rs. 650 a chest (Government of India Resolution in the Finance Department, No. 6064, dated the 11th December 1894).

system, which was maintained from 1823 to 1829, and is described in paragraph 93 of our Report, was essentially restrictive in character.

Present arrangements with the Baroda State.

99. As regards Baroda, the present arrangements with that State, though founded on an early convention, are the outcome of comparatively recent negotiations. It has already been stated that in 1803 the Gaekwar, who at that time was dependent on the British Government for his political existence, acquiesced in the prohibition of poppy cultivation, which was then of a very limited character, within his territories, though it seems doubtful how far even temporary effect was given to this arrangement. In 1820 he entered into a formal convention with the British Government, which is still in force. The main object was to prevent the smuggling of Malwa and Baroda-grown opium to the coast. Under the terms of this agreement, the Gaekwar's Government undertook to buy up the opium locally produced and arrange for its sale to the merchants and individual consumers within its territory, at the prices in force in the adjoining British districts. It was provided that if more opium were required for local consumption it should be procured from British territory, or, if necessary, from Malwa under special passes. There was no recognised export of Baroda opium at that time, and none was contemplated by the agreement. The State control of production and sale, however, was not introduced, and as time went on, the poppy cultivation appears to have increased, and the Baroda traders began to take a part in the foreign trade. Before 1857 the Baroda-grown produce was sent to Ratlam to be manufactured, and in this way entered into the general Malwa export. Special circumstances led to the discontinuance of this practice, and the Baroda traders having procured from Malwa the services of men who were skilled in the preparation of opium for the China market, arranged for the local manufacture of their own produce. In 1857 scales were established at Ahmedabad, to meet the emergency arising from the disturbed state of the country on account of the mutinies. From 1858 onwards Baroda grown opium was allowed to be weighed at these scales, and so far the direct export by sea of this opium was recognised. In 1878, however, further arrangements were made with Baroda with a view to give practical effect to the provisions of the convention of 1820 which had become inoperative, the necessity for this measure having been forced on the attention of the Bombay Government by the growth of a large smuggling trade in Baroda grown opium into or through British territory. In accordance with these arrangements the Baroda State has definitely established an opium monopoly, of its own, on the model of the Bengal monopoly, and is allowed to export its home-grown opium by sea on payment of the full pass duty. It is further required to limit its production to the actual requirements for the licit consumption within the State and for the export trade. By a subsequent understanding, arrived at in 1886, the minimum retail price within the State is to be the same as in adjacent British territory.

II. p. 357.
IV. 22,604.
IV. 22,610.
IV. p. 456.
II. p. 358.
IV. 22,420–422, 22,616.
II. p. 358.

Present arrangements with States in Gujarat and Kathiawar, &c.

100. As in the case of Baroda, so in the case of the Native States in Gujarat, Kathiawar, and Cutch the opium arrangements now in force have taken their present form during recent years, but the special position of the Paramount Power towards these States, in regard to these arrangements, has grown up from the beginning of their political relations with the Government of India. British supremacy, as already stated, was established in Kathiawar and Cutch in 1820, and engagements, which will be found in our Appendices, were entered into by the Kathiawar States in 1821, by which they undertook to stop the import into their territories of any opium not covered by a British pass, the main object at that time being to prevent the passage of Malwa opium to the Kathiawar ports for export. They also undertook to obtain such opium as was required for local consumption from the British depôts. The right to prohibit poppy cultivation in these States is not mentioned in express terms in the agreements of 1821; but we have it in evidence that this right has been asserted and exercised for many years by the British Government. Similar engagements were executed about the same time by the States in Gujarat, and appear to have been made applicable, at a subsequent date, to Cutch, and when it was decided, in 1829, to withdraw from the attempt to limit the production of opium in Malwa it was expressly provided that the restrictions then in force in the Gujarat and Kathiawar States and in Cutch should be maintained. With the lapse of time, however, these engagements were largely lost sight of, and it was brought to the notice of the Bombay Government in 1869 and subsequent years that the greater part of the opium consumed in these States and in British districts was smuggled from Malwa and from Baroda. It was mainly the necessity of putting a stop to this illicit traffic, in the fiscal interests of the Government that, so far as the Bombay Presidency was concerned, led to the introduction of the Opium Act of 1878, and of the system of minimum guaranteed vend.

II. p. 360–1.
II. p. 356.
IV. p. 480.

101. On the passing of the Indian Opium Act and the promulgation of the Bombay opium rules under its provisions, fresh arrangements were made, of which a summary
II. p. 362–5. is given below. They have been accepted by all the States in Gujurat and Kathiawar, and have been in force for some years past, though formal engagements have not been entered into in all cases. Some of the agreements that have actually been executed will be found in our Appendices.

(1.) The cultivation of the poppy and the manufacture of opium are prohibited.

IV. p. 356. (2.) The Indian Opium Act and the rules framed thereunder by the Bombay Government are enforced throughout each State, as far as local conditions allow.

(3.) The Chief of each State is required to prevent export from, import into, or transport through his State of any opium, except that which is covered by a British pass and has paid the duty prescribed by the British Government.

(4.) Opium required for home consumption in each State must be procured either direct from Malwa, or by purchase in Bombay, or at a Government depôt, under pass as above.

(5.) Retail sale within each State is regulated according to the rules for retail sale in force in the adjoining British districts.

(6.) Opium must not be issued to licensed vendors at a price lower than that at which it is issued to licensed vendors in the adjoining British districts; and, similarly, the licensed vendors may not sell by retail to the public at a lower price than that which prevails in such British districts.

(7.) In consideration of the fulfilment of the above obligations, the British Government has agreed:—

(*a.*) To pay to certain of the States a fixed annual sum as compensation for the loss of revenue on account of transit dues and cesses on the manufacture of opium; and,

(*b.*) To allow each State to import as much opium as it requires for its own home consumption, either from Malwa or from Bombay or from a British depôt, either duty free or at a reduced rate of duty. It is understood that the difference between such reduced rate of duty, if any, and the full British rate will be levied and received by the State.

Nature of arrangements as to transit of Malwa opium through British territory.

102. We are now in a position, at the close of the historical retrospect contained in the preceding paragraphs, to state clearly the full nature of the existing arrangements for the transit of Malwa opium through British territory for export beyond the sea. These arrangements rest primarily on the geographical position of the opium-producing States, none of which have access to the sea. At the beginning of the present century, when the Malwa export trade first came prominently to notice on account of its competition with the Bengal opium, the British possessions on the west coast of India were limited to Bombay, Surat, and one or two other places of subordinate importance.* But by the end of the first quarter of the century, owing to the acquisition of fresh territory, and the establishment of an absolute suzerainty over Kathiawar and Cutch, the Company had dominated the upper line of the west coast; and with the conquest of Sind in 1843, the complete command of the littoral from Bombay to Baluchistan was secured. Since that date, therefore, the Government of India have been possessed of plenary power to regulate and tax the through trade in Malwa opium in virtue of their holding the whole of the intervening territory between these States and the seaboard. The right of transit, in the case of Baroda, is guaranteed under the convention or agreement of 1878, but in the case of the States in Rajputana and Central India it depends on long prescription and use. The right in their case was recognised as early as 1830, and has never been questioned since then, though the Government of India have been enabled to follow a different policy as to fixing the rate of the pass-duty from the time the entire command of the coast line was assured. That policy, of late years, may be briefly described as a policy of taking the highest duty that the trade can legitimately bear, the duty being assessed with direct reference to the prices realised for the Bengal opium at the Calcutta sales.

*Production of Opium.*

Production of opium in the States of Rajputana.

103. There are nineteen States in all in Rajputana, in five of which, according to the evidence placed before us, no opium is produced, while in six or seven others the production is relatively unimportant. The chief producing States are Meywar, Jhallawar, Kotah, Tonk, and Pertabgarh. Tonk has districts actually within Malwa, and the other States are contiguous to what has been called the table-land of Central India, and, in a greater or less measure, share its advantages in the way of climate and soil. Accurate statistics regarding the area under poppy cultivation and the yield of crude opium are not obtainable, but according to the figures specially prepared for the Commission, which may, no doubt, be accepted as approximately correct, the total area under poppy, on the average of the last five years, was about 134,000 acres, and the annual yield, which appears
20,411. to have been over-estimated by several Native States, amounts to about †19,000 chests of
IV. p. 391 (par. 6). manufactured opium. Details will be found in the table given below.

* A clear presentment of the position at the beginning of the century, and after 1804, will be found in the maps facing pages 204 and 278 of "The Rise and Expansion of the British Dominion in India." 3rd enlarged edition, 1894 by Sir Alfred Lyall.

IV. 20,411. † The out-turn is given as 37,524 maunds, and the figures in the body of the Report have been arrived at by allowing 160 lbs. (or two maunds) of crude opium for each chest of manufactured opium.

TABLE 9, showing the AREA, POPULATION, and APPROXIMATE AMOUNT of POPPY CULTIVATION in the different NATIVE STATES in RAJPUTANA.

| Name of State. | Area in Square Miles. | Population. | Percentage of Rajputs. | Approximate Acreage under Poppy Cultivation. |
|---|---|---|---|---|
| Jeypore | 15,349 | 2,832,276 | 4·5 | 3,000 |
| Meywar | 12,861 | 1,862,478 | 7·4 | 50,000 |
| Pertabgarh | 959 | 87,875 | Not known | 8,383 |
| Jhallawar | 3,043 | 343,601 | 2·4 | 28,625 |
| Kotah | 3,803 | 526,276 | 3 | 22,765 |
| Bundi | 2,225 | 295,675 | 3·4 | 1,871 |
| Tonk | 1,415 | 198,314 | 5·6 | 14,010 |
| Karauli | 1,229 | 156,587 | 5·6 | 1,180 |
| Banswara | 1,505 | 180,916 | 7 | 950 |
| Kishengarh | 874 | 125,516 | 5·3 | 173 |
| Dungarpore | 1,440 | 156,000 | 6·7 | 2,285 |
| Dholpur | 1,156 | 279,890 | 9·6 | 268 |
| Shahpura | 406 | 63,646 | 3·5 | 570 |
| Bhartpore | 1,961 | 640,303 | — | — |
| Bikanir | 23,090 | 831,955 | 8 | Nil. |
| Jaisalmir | 16,039 | 115,701 | 24·5 | Nil. |
| Marwar | 34,963 | 2,521,727 | 9·7 | Nil. |
| Sirohi | 1,966 | 188,977 | 8·7 | Nil. |
| Ulwar | 30,512 | 767,786 | 3·6 | Nil. |
| Total | 130,268 | 12,016,102 | — | 134,080 |

104. In the opium-producing States poppy cultivation is entirely free, and the cultivators are at liberty to dispose of the produce as they may think fit. As a general practice, however, the crude opium, collected by them from the poppy plants, which is locally termed "chik," is purchased by village money lenders, known as Bohras and Manotidars, who are in the habit of advancing money on the crop. These village money-lenders sell the crude opium to traders who arrange for its manufacture, and who, in some cases, themselves deal direct with the cultivators. The opium is manufactured in the form in which it is sent to the China market at various places in Rajputana, the most important of which are Kotah, Patan in the Jhallawar State, and Udaipur in Meywar, but the greater part of the Tonk opium goes to Indore for manufacture. When the time for export arrives, the chests are despatched to the nearest scales; the Meywar opium, for instance, goes to Chittore, the Jhallawar opium to Ujjain in Central India, and the Pertabgarh opium to Mandsaur, also in that Province. The chests are then forwarded direct to Bombay. The amount of poppy cultivation in the opium-producing States, apart from ordinary fluctuations, varies with the rainfall. The tendency in most of these States has been to put as much of the irrigated area as possible under poppy, but the extent of this area varies with the amount of water in the wells, tanks, or streams used for irrigation purposes, and this depends on the character of the rainfall. The amount of poppy cultivation is also affected by marked fluctuations in the China market. The price paid to the cultivators, which is a matter of arrangement between them and the village money lenders, depends on the prices ultimately realised for the manufactured article in China, though the opium is not, as a rule, exported until it is two years old, and of late these prices have been consistently low. This has had the effect of increasing the stocks of manufactured opium in the hands of traders, who have held back in the hope of a rise, and has also had the effect, according to the statements of the representatives of several of the opium-producing States, of restricting, to some extent, the area of cultivation, the poppy crop having been given up on irrigated land of inferior quality. With the fall in prices the profit to the cultivators, as well as to the merchants and others engaged in the trade, has necessarily been reduced, but there is a large body of evidence to show that, notwithstanding this, the poppy is still the most valuable crop that can be grown on good irrigated land. The light in which it is regarded by the cultivators themselves depends not only on the pecuniary value of the crop, but also on the fact that opium represents to them ready cash, enabling them to pay off their loans and obtain fresh advances—a matter of no small importance in a country where the agricultural classes are, as a rule, constantly in the hands of the money-lender.

System of production and manufacture of opium in Rajputana.

IV. 27,035.

105. Under the Central India Agency there are numerous States, some of which are entirely independent, subject only to the suzerainty of the British Government, while

Production of opium in

the States of Central India.

IV. App. XI.

others have a less degree of independence. There are also numerous estates, as they are termed, which, in most cases, are under the control of one of the independent States. For the purposes of this inquiry, these States and estates have been arranged in three groups, in the first two of which are included all those that are situated within the limits of Malwa, 45 in number. For practical purposes, however, the 14 States which constitute the first group, may be said to comprise all the chief opium-producing States in Central India that have a substantial interest in the export trade. The area actually under poppy cultivation can only be given approximately, but the figures

IV. 22,068.

specially prepared by the States themselves to be placed before the Commission, are said to be more trustworthy than any information previously supplied by them. No restriction whatever is placed on the cultivation of the poppy, and all irrigated land capable of producing opium is assessed to land revenue on the assumption that this crop will be grown. In the more important States a fixed settlement of land revenue, for some term of years, is in force, so far as the land held direct from the State is concerned; but no record is maintained of the crops actually grown from year to year, and a large part of the total area consists, in almost all cases, of Jagir estates,* with regard to which the States themselves possess no accurate information. According to the approximate figures furnished to us, the total area under poppy cultivation may be put down at 292,000 acres, in round numbers, on an average of the

IV. App. XI. 21,869.

last five years, and the yearly out-turn of manufactured opium at about 35,000 chests. Of this total area, 283,000 acres were in the 14 States already spoken of as the chief opium-producing States, and statistics regarding them will be found in the table below.

TABLE 10, showing the AREA, POPULATION, and APPROXIMATE AMOUNT of POPPY CULTIVATION in the chief OPIUM-PRODUCING STATES in CENTRAL INDIA.

| Name of State. | Area in Square Miles. | Population. | Approximate Acreage under Poppy. |
|---|---|---|---|
| Gwalior | 29,047 | 3,378,774 | 113,711 |
| Indore | 8,400 | 1,099,990 | 76,25h |
| Bhopal | 6,784 | 952,486 | 21,753 |
| Jaora | 581 | 117,650 | 10,847 |
| Ratlam | 729 | 89,160 | 9,051 |
| Dhar | 1,739 | 169,474 | 9,377 |
| Estates subordinate to Dhar | | 10,486 | |
| Narsingarh | 720 | 117,280 | 11,038 |
| Rajghar | 642 | 119,489 | 9,174 |
| Sitamau | 350 | 33,307 | 3,076 |
| Dewas (junior branch) | 134 | 69,684 | 5,639 |
| Dewas (senior branch) | 155 | 82,389 | 5,658 |
| Sailana | 123 | 31,512 | 3,315 |
| Khilchipur | 204 | 36,302 | 3,104 |
| Piploda | 60 | 12,792 | 1,446 |
| | 49,668 | 6,319,775 | 283,439 |

System of production and manufacture in Central India.

106. The system under which the poppy is cultivated and opium manufactured is practically the same as in Rajputana. The opium juice, as extracted by the cultivators, is usually sold to a middleman or money-lender, who has often advanced money on the crop, and he, in turn, disposes of it to an opium trader, who, in some cases, may himself be the exporter. The manufacture is carried out locally, and, according to the custom of the trade, the opium for the foreign market is made up in balls of the weight of 1 lb., which are, therefore, less than half the size of those into which the Bengal opium is made up at the Government factories. The chief centres of the manufacture are at

IV. 22,203.

Indore, where, it is stated, some 6,000 chests are annually prepared from crude opium not produced within the limits of that State, and at Ujjain in Gwalior territory. Opium is manufactured also at Bhopal, Dhar, Jaora, and Ratlam, at each of which places scales have been established, and at some other towns. In a number of States, however, there is no manufacture of opium for the export trade, the produce being taken away in its crude or unmanufactured state, to one or other of these centres. The fall in prices of late years in the China market has had the same

* Jagir estates are estates with regard to which the right to receive land revenue has been wholly or partly assigned by the State to individuals, on conditions of military aid or service.

effect in Central India, as in Rajputana, in the way of curtailing the area under poppy cultivation in some of the States, and has also led to a steady increase in the stocks of manufactured opium held in Malwa. The general reduction, however, in the margin of profit is said, on the whole, not to have deprived the poppy crop of the special place which it holds, in virtue of its various advantages, as a very remunerative one to the cultivator. Opium was a staple crop in Malwa in the 16th century, and must, therefore, have been cultivated long before that period, the climate and soil are specially adapted to its production, and the experience of centuries has proved its value, and firmly established its popularity in the agricultural mind, always peculiarly tenacious of tradition in such matters. Throughout the opium-producing States, poppy is grown as a second crop in the year in succession to maize, and in this respect is said to occupy a unique position, while, apart from the price realised for the crude opium, the disposal of the poppy seeds and heads brings in money, and, during the growth of the plants, the young leaves that are thinned off are used as a vegetable. The value of the poppy to the cultivator is further enhanced by the fact that the opium, as extracted by him, commands an immediate cash price, and the crop is, therefore, regarded as a good security for the advance of money.

Production of opium in the Baroda State.

107. As already stated, an opium monopoly was introduced in the Baroda State in 1878, on the lines of what is known as the Bengal monopoly. Under this system the cultivation of the poppy, mainly with a view to secure proper control over it, is confined to the northern or Kari division of the State, which had from the first been the chief seat of production, and is only permitted under license. The cultivators are required to make over the whole produce to the State authorities, and the crude opium is stored and manufactured at the town of Siddhpur. No statistics can be obtained as to the extent of the poppy cultivation before the introduction of the present system, but it was, no doubt, considerable, as two or three thousand chests of Baroda-grown opium are said to have been exported annually. Of late years, however, there has been no foreign export because, with the State management of the trade, the pass-duty has been thought to be prohibitive. The area under poppy for the production of opium for local consumption is about 5,000 acres.

22,499–502.

22, 513.

IV. App. XIV. p. 424.

## Consumption of Opium.

General character of opium consumption in Rajputana.

108. As regards the consumption of opium in Rajputana, little or no statistical information is to be obtained. In the States in which opium is produced, the cultivators are at liberty to dispose of the produce as they please, and to keep back as much as they think fit, and though various frontier customs and other duties are levied in different States, in none of them can an effectual system of excise be said to be in force. Of the nineteen States in Rajputana, sixteen are ruled by Rajput families; two, Bhartpore and Dholpur, by Jat families, and Tonk by a Mahomedan family. The total population at the last census in 1891 was twelve millions, of which the Rajputs, who are most largely represented in Jaisalmir and the Western States, constitute about 6 per cent. In point of numbers Brahmins and Jats, each caste exceeding a million, occupy the first place, and then follow Mahomedans and the Mahajan or commercial class, while the Bhil population is nearly the same as that of the Rajputs. No complete or satisfactory information has been obtained as to the extent of the consumption of opium among the different classes and castes of Rajputana, though many of the witnesses have given general per-centages of the opium consumers in the different States. Our experience, however, throughout this inquiry has been that very little reliance can be placed on per-centages of this kind, though the statements of witnesses regarding their own castes are probably entitled to some weight. Moreover, the difficulty of obtaining trustworthy evidence as to the personal habits of Natives of India, has been strongly felt in the case of the Native States. Dr. Hendley, who has been for twenty years in Jeypore and has placed before the Commission the results of a valuable statistical inquiry into the opium habit made by him in 1893, has particularly drawn our attention to the jealousy and suspicion that was aroused by this inquiry; and one of the Pertabgarh witnesses mentioned that, even on the occasion of the last census, the Bhil population in that State could not be enumerated, for fear of giving rise to serious misunderstandings. This will serve as an illustration of the practical impossibility of ascertaining, with any certainty, the habits of the forest tribes in the matter of taking opium. The chief consumers of opium are the Rajputs, the ruling race of the country, and more particularly the Rajput nobles or Thakurs, and the castes that are closely allied to the Rajputs, such as Charans and Bhats, the hereditary bards of Rajputana, who, however, are not a very important class numerically. As to the extent to which the opium habit prevails among them, the statements of the witnesses

IV. 20,627.

V. 380.

IV. App. I.

IV. 20,604.

IV. 20,649. differ, and there is, no doubt, some diversity of practice in different parts of the country. One Rajput landowner of the Bhati clan informed us that it would be quite the exception to find anyone in his caste who did not take opium; Dr. Valentine, III. 19,899. the principal of the medical missionary college at Agra, who had had long experience in Jeypore up to 11 years ago, stated that 90 per cent. of the adult males, among the Rajputs, took opium in his time, a statement that received some confirmation as regards IV. 20,268. the Rajputs of the Shekhawati districts of Jeypore; and a number of witnesses from other States placed the per-centage of Rajput opium consumers at figures varying IV. 20,982. from 40 to 75 per cent. of the adult male population. On the other hand, Rajput witnesses from Ulwar and Marwar speak of consumers in their caste as not exceeding 10 or 15 per cent. What seems to be clearly established is, that the great majority of middle-aged men among the Rajputs habitually take opium, beginning the practice rather earlier in life than other classes of the population, and that a substantial per-centage of the younger men also acquire the habit. There are, undoubtedly, cases of immoderate use among the wealthier Rajputs, but they are said to be exceptional, and less in number than they were some few years ago. This is attributed to IV. 20,176. the growth of enlightenment and education, and it has been specially mentioned that the training of young Rajput chiefs and nobles at the Mayo College has had, and IV. 21,023. is likely to have, a decided effect in preventing them from acquiring the habit. Passing now to the use of opium among the general population of Rajputana, we have first to deal with the middle classes. The most important of these are the Mahajans or Banias, the banking and trading class, rather more than half of whom are by religion orthodox Hindus, while the remainder are Jains. Members of this class from Rajputana are to be found in many parts of India, engaged in trade, and they are commonly known by the generic name of Marwaris, men of Marwar, though they may not have come actually from that State. In Calcutta and other places we have had evidence to the effect that the habitual use of opium in moderation is prevalent among these Marwaris without affecting their well-known shrewdness and business capacity, but the results of the inquiry in Rajputana itself can hardly be taken as conclusive on this point. In some States the Mahajans are said to be less addicted to opium than other castes, while in others they are are placed next in order after the Rajputs and allied castes in the matter of opium consumption. It is also stated 20,268. that those who are Jains by religion are in the habit of taking bhang, the hemp drug, rather than opium. As a general use opium is consumed by the members of this class as a restorative or stimulant after middle age, and a similar use prevails, more or less, among other castes, such as the Brahmins, which may also be included under the middle classes of the country. As to the consumption by the poorer sections of the population, witnesses from several States have spoken of opium being largely consumed by the Forest tribes, such as Bhils, but the evidence is of a very general character, while among the agricultural and labouring classes the habitual use is also as a restorative after the age when strength begins to decline, and rheumatism and other ailments, common to those who live a life of exposure, tend to become chronic. Among these classes an occasional use of opium, during the cold weather and at times of special fatigue and exposure, is well established, especially in the case of men who, like camel drivers, have to work in the Rajputana desert, with its great extremes of heat and cold. As regards 20,180. all these classes the number of opium consumers who carry the habit to excess is 20,150. said on all sides to be very small. As to the forms in which opium is consumed 21,665. there is practical agreement that smoking is little known in Rajputana. In the 21,664. Jeypore and Dholpore States the selling of smoking preparations is nominally penal, 21,668. and a Rajput representative from the Kotah State said that in his part of the country 21,689. any Rajput who smoked opium would be put out of caste. The drug is usually IV. 20,698. taken in the shape of pills, which among the rich are frequently mixed with spices. It is also largely drunk in a solution of water, especially on ceremonial and social occasions. This liquid form is generally known as *Amal pani*, opium water, or *Kasumbha*, though other local names are mentioned. The term *Kasumbha* is said IV. 22,57 to be derived from *Kasum*, the name of the safflower (*carthamus tinctorius*), and owes its derivation to the colour of the liquid. It should be added that *post* or a drink prepared from an infusion of poppy heads in water is much resorted to by the poorer classes, as being cheaper than opium.

Ceremonial and social uses of opium in Rajputana. 20,221.

109. Opium, also, occupies a special position in Rajputana in connexion with ceremonies and social usages. It is considered obligatory with the Rajputs as a matter of ancient custom to consume opium on the anniversaries of certain religious festivals, such as the Holi, the Dasera, and the Aksha Tij or Hindu new year, a festival peculiar to Rajputana, and also at the important epochs of family life,—

betrothals, marriages, the birth of sons, periods of mourning, and other occasions.* In the case of betrothals the use of opium has acquired a quasi-religious sanction. "This ceremony," we were informed by the representative of the Pertabgarh State, "has come "to be called the *Amal ka dastur*, or opium ceremony, from the fact that it is not held "to be complete unless the bridegroom or his father or guardian has partaken of the "opium offered by the bride's father. In fact opium taking is as essential a part of a "betrothal as the *phera*, or seven perambulations round the sacred fire, are for the "marriage ceremony." The use of opium, again, is indispensable when feuds are settled and quarrels made up, and on these occasions it is regarded as the seal of the reconciliation. These ceremonial uses, primarily a Rajput custom, have been adopted by other castes, though the extent to which they are actually obligatory upon them is open to some doubt, and the line of distinction between obligation and habit may not always be easy to trace. The obligation is unquestionable in the case of Charans and Bhats, and of some few other castes closely allied to the Rajputs, and is said to extend to the Jats, the most important agricultural class in Rajputana, while several of the Marwar witnesses speak of the use of opium in the case of reconciliation and of the more important epochs in family life, as being binding on all castes with the exception of some sects of the Brahmins and Mahajans and of the Mahomedans. There is also evidence to show that among the Bhils opium plays an important part at solemn reconciliations, and is provided at certain ceremonies. Whether it is incumbent on the guests actually to take opium when it is offered on ceremonial occasions is a further question on which the evidence is to some extent conflicting. The practice probably differs among different castes, and even among different clans of Rajputs, but on the whole it appears to be true that a nominal compliance on the part of those who are not accustomed to take opium is sufficient at the present time to satisfy the custom. In social life opium is the mark of hospitality and good fellowship among the Rajputs, is provided at entertainments, and offered to guests on their arrival and departure, and in this respect, also, the custom of the ruling class has been followed by other castes. It should be added that several Native witnesses mention the fact that it is usual among the higher classes in Rajputana to begin letters with a complimentary formula, asking their correspondents to take a double allowance of opium, the Rajputana equivalent of wishing "a double health," as showing how closely the use of opium is bound up with the personal life of the people. We have already spoken of the influences at work in the direction of checking individual excess, and we find that there is a growing tendency to restrict the lavish use of opium, which in the past was considered essential to a character for hospitality, on these ceremonial occasions. This is part of a general social reform that is gaining ground with the object of preventing reckless and ostentatious expenditure, especially on the part of the Rajputs, and a good deal, no doubt, must be attributed to the greater necessity for economy caused by the higher price that has had to be paid for opium of late years in many States. It is also stated that the consumption of opium, at some of the less important epochs of family life, is being given up, particularly in towns, among the better educated classes of the community.

IV. 21,590.

IV. 20,428, &c. 27,025.

20,900. 20,261.

IV. 20,268. 20,334. 20,940. 20,978. 20,987. 20,990. 20,999. 21,140.

IV. 20,604. 21,655.

IV. 21,089. 20,267. 20,814. 37,032.

21,380. 21,381.

110. One other use of opium, the use during infancy, requires special mention. Many of the Native witnesses from the different States described the practice of giving opium to infants and young children as being an ordinary part of the domestic life of the country. In some instances their evidence was of general application, while in others they spoke more particularly as to the custom of the caste to which they belonged; but the whole tenor of the evidence makes it certain that the practice is common to all classes and castes in Rajputana, though it may be more universally followed among the Rajputs and Charans, for instance, than among other sections of the community. This is confirmed by the independent observation of British medical men with experience in this province, and by statistics regarding a hundred cases of infant life furnished by Dr. Hendley of Jeypore. The drug is given in minute doses, which are variously described by Native witnesses as being of the size of a millet seed, or a mustard seed, from the time the child is a few weeks old until it is weaned. The age at which the practice is discontinued is placed by most of them at the third year,

Use of opium in infancy in Rajputana.

IV. App. III.

* The following is a list of these occasions as given by Thakur Bulidana, a Rajput landowner of the Jaisalmir State:—

"The occasions on which it is obligatory to partake of opium are:—1. Betrothals. 2. Weddings. 3. Visit of a son-in-law to his father-in-law. 4. Birth of a male child. 5. First shaving of a male child's head, among Rajputs and Charanas. 6. Shaving the parting of a beard, by Rajputs and Charans. 7. For 12 days after a death, among Rajputs and Charans, and for the same or a lesser time among other castes. 8. The Akhatij festival. 9. At reconciliations. It is also customary at other festivals, at temples on certain days, and at friendly gatherings."—IV. 21,150.

IV. 20,285. 20,992. 21,073. 21,555.

though in some parts of Rajputana, and among certain castes, the administering of these doses is carried on up to a later age. The objects with which the opium is given are said to be to ward off infantile disorders, such as colds and diarrhœa, to prevent pain and crying at the time of teething, and above all, especially in the case of the cultivating and labouring classes, to keep the child quiet, so that the mother may be free to discharge her household duties or undertake her share of work abroad. This practice is discussed in the Memorandum by Sir William Roberts attached to this Report, but we have thought it necessary to mention the matter specially here, because the evidence shows that the custom is more universal in Rajputana than elsewhere in India, and that it is one to which the people are firmly wedded.

Consumption of opium in the States of Central India.

111. The consumption of opium in the States of Central India need not be treated at length, as in various respects it is similar to the consumption, already described, in Rajputana. In Malwa, or, in other words, throughout the real opium-producing region of Central India, there is no limit as to the possession of opium, and the cultivators can do what they like with the produce of their poppy fields, while, except in a few large towns, the States themselves make no attempt to realise revenue from the retail vend of opium. Outside Malwa proper, in the northern and north-eastern districts of the Gwalior State, and in the tracts known as Bandelkhand and Baghelkhand, an excise system is in force, the right to retail opium being sold by auction; but even as regards these districts and tracts no statistics can be supplied as to the quantities actually sold by the contractors. The general character, therefore, and the extent of the opium consumption can only be gathered from the statements of the witnesses who have appeared before us. The population of Central India is about 10 millions, of which the agricultural classes represent 2½ millions, the forest and hill tribes 1½ millions, the military and dominant classes rather more than a million, and Brahmins nearly a million. The Rajputs form as large a part of the entire population as they do in Rajputana, and are chiefly to be found in Malwa where there are several Rajput States, and a number of Rajput landowners or Thakurs occupying a more or less independent position. The proportion of the Rajputs in Central India who are habituated to opium is as high as in Rajputana, and the special uses of the drug in connexion with ceremonies and social occasions, which have been described at some length in a former paragraph, are equally in vogue among

IV. 21945. 21,963–65.

them. Some of the Thakurs are described as using *Amal pani*, or the liquid form of opium, for regular drinking parties, and this custom is said to lead to cases of excess. Among the general population the practice of giving opium to infants, a practice mentioned in the Institutes of Akbar as being in force in Malwa during the sixteenth century, is followed by all classes except the Bohras, a Shia sect of Mahomedans, though it would seem not to be quite so universal as in Rajputana. In the case of the adult population opium is mainly used as a restorative and stimulant after middle age, especially among the labouring and agricultural classes, who are constantly liable to exposure and fatigue. These uses are more common in Malwa than in the rest of Central India, and the moisture of the climate in that region is very generally assigned as a reason for the prevalence of the opium habit. What proportion of the population is represented by the opium consumers is a question on which different views have been

21,870. 21,877. 22,171. 22,278.

expressed, but by general consent they constitute a considerable per-centage of the adult males in Malwa, a per-centage that is placed as high as 20 to 30 per cent. by various witnesses, and the proportion is still higher in States where the Rajputs enter largely into the population. Everywhere moderation is said to be the rule and excess

IV. 408. 22,084. 22,085. 23,061.

exceptional. Opium smoking is extremely rare, though one shop is licensed for the purpose at Jaora and another at Ratlam. This method of consumption is treated as a criminal offence in one of the divisions of the Gwalior State outside Malwa and in the cities of Gwalior and Indore, while *chandu* smoking is said to be punished with a small fine in the petty State of Diwas. Ordinarily, opium is consumed in the form of pills or in a solution of water, the latter being chiefly used among the Rajputs and those who follow their customs, while the poorer classes, as in Rajputana, drink a decoction made from poppy heads.

Consumption of opium in Baroda and the Native States of Gujarat Kathiawar, &c.

IV. p. 117,

112. The consumption of opium in Baroda and in the Native States of Gujarat, Kathiawar, and Cutch, can appropriately be dealt with in one place. Part of the Baroda territory is situated in Kathiawar; Rajput influence may be said to be dominant in all these States, and the general uses of opium among their populations are characteristically the same. Baroda has an area of 8,226 square miles, and a population of nearly 2½ millions, and is in a position to give statistical information regarding the consumption of opium, as a regular system of retail sale is in force under State control. There are 128 shops licensed for the sale of opium, or one shop to every 20 square miles and 5,632 inhabitants, but consumption on the premises is not

allowed. The total amount consumed yearly was 63,040 lbs., or 288 grains per head of population, on an average of the last five years, but these figures must be accepted with some caution. The Baroda manufactured opium is held locally in high esteem, and is stated to have displaced the Malwa opium from the position of favour which it previously occupied. As a result of this, the inhabitants of the surrounding British districts and Native States are in the habit of resorting to the nearest Baroda shops for their supplies of the drug, and some allowance must be made on this account before the actual Baroda consumption can be fairly estimated. Statistics regarding the other Native States cannot generally be obtained, but the amount of opium imported from Malwa into the different agencies is known, and in some instances the number of consumers and the amount taken per head of population have been estimated. Throughout these States the consumption is, in almost all respects, similar to the consumption which has been already described in the case of Rajputana and Central India. Opium is a common domestic remedy among the people; the practice of giving it to infants is followed by most classes and castes, while the use, as a rule, among the adult population is after middle life. The largest consumers are the Rajputs and the castes allied to the Rajputs, the Kathis, a special caste chiefly to be found in Kathiawar, and certain Mahomedan communities. Among these classes, with the exception of the Mahomedans, opium occupies the same position in connexion with festivals, ceremonies, social gatherings, and reconciliations, as it does in Rajputana, and their customs have been adopted by other Hindu castes, especially by the well-to-do Kanbis. The proportion of opium consumers to the entire population is said to be small, on the whole, in Baroda, but in some of the Gujarat and Kathiawar States it has been placed as high as 25 and 30 per cent. of the adult males. Cases of individual excess are unusual, and there is a general concurrence of testimony that the consumption of opium, particularly on ceremonial and social occasions, has been declining of late years. This is due, in large measure, to the higher price of the drug since the introduction of the arrangements of 1878, and it has been pointed out that some of the classes who recognise the social obligation to provide opium on these occasions have been glad of an excuse for escaping a serious tax on their incomes. Other influences also must be taken into consideration. That part of the younger generation which growing up with an English education is said, as a matter of fashion, to prefer alcohol to opium, and various associations, the most important of which is the Swami Narain sect, are working in the direction of promoting entire abstinence from all stimulants, including opium. As to the prevalent mode of consumption, opium is usually taken in the form of pills or of *kasumbha;* but *post*, or the drink made by steeping poppy-heads in water, seems to be little used. Smoking opium has been a criminal offence in the Baroda State since 1861, and is said to be quite unknown there. In the other States the practice is rare, though it is mentioned that in Junagadh five small shops, which appear to be chiefly intended for religious mendicants, are allowed for the purpose of smoking *chandu*.

IV. 22,619.

24,573.

24,574.
24,599, &c.

### *Export of Malwa Opium.*

113. At the present time the opium for export from Bombay to China and the far East, is drawn entirely from the opium-producing States of Rajputana and Central India, as for several years past Baroda has taken no part in the foreign trade. When the opium is ready for export it has to be weighed, as already explained, at one of the various scales under the management of Government officials, and accurate statistics can be obtained as to the amount weighed for export, and actually exported from Bombay. A small quantity of opium, about 80 chests a year, from the petty State of Dungarpur in Rajputana, is weighed at Ahmedabad, but, with this exception, the whole of the Malwa opium for the China market passes the scales at Indore, or one of the eight other places, under the administrative control of the Agent to the Governor-General in Central India. According to the statistics presented to us in that province, which will be found among our appendices, the annual number of chests that passed these scales for export to China was 35,000 on an average of the last 15 years. No details are recorded at the scales to show from which State the opium is actually derived, but all the opium weighed at Chittore and Udaipur, which amounts to 5,000 chests annually, comes from Rajputana, and the opium sent by Jhallawar, Kotah, Tonk, and other Rajputana States to the scales at Ujjain, Mandsaur, and Indore is known, from local information, to amount to another 5,000 chests annually. The total contribution, therefore, to the annual foreign trade from the Rajputana States is 10,000 chests, and the remaining 25,000 chests represent the annual exports from the States in Central India. The average outturn for the year in manufactured opium is estimated at between 18,000

Export of Malwa opium to China and the far East.

IV. App. XI.

IV. 22,090.
22,091.

and 19,000 chests in the case of Rajputana, and at 35,000 chests in the case of Central India. More than half the produce, therefore, of the opium-growing States in the first-named province and two-thirds of their produce in the second case is sent to China.* This, however, does not represent the whole interest of these States in the foreign trade. Malwa opium is said to improve with keeping, and large stocks, which has been steadily increasing of late years, are held by local traders with a view to eventual export. These stocks in Central India are put down at 55,000 chests, of which number 48,000 are held in the Indore and Gwalior States. All the chief producing States in Central India, included in the first group, have a substantial interest in the export trade, whether they are manufacturing states or not, and as an illustration of the antiquity of this trade it may be mentioned that among the Gwalior witnesses was an opium-trader of Ujjain with the patronymic of Jahazwala, or shipowner, due to the fact that his great grandfather had exported opium to the far East from Broach in his own ship. As regards the Rajputana States, the representatives of Jhallawar and Tonk made it clear that for years past their production had been almost entirely for the foreign market. The manufacture of Malwa opium is carried on at a number of different places in Rajputana and Central India by various traders and small manufacturers; and though the requirements of the China market are, no doubt, well understood, the trade having been in existence for centuries, it is impossible, with this system, that the outturn should possess a uniform quality and consistence like the Bengal opium, which is manufactured with much care and under scientific supervision at two Government factories. The pass duty is the same in all cases, and only the best opium, therefore, is exported, but there are recognised distinctions in the trade between the produce of various districts, and, as a matter of fact, a good deal of difference exists in the quality of the exported opium, the price in China being said to vary by as much as Rs. 150 a chest. The opium is tested at the local centres of manufacture by agents of the exporting firms, and also at Bombay, where there are regular rooms for the purpose at the Government warehouse, and the price which it commands in the China market depends on the commercial reputation and position of the exporter. The trade has always been a speculative one, and liable to fluctuations, but of late years the exports have fallen off to a considerable extent. The average number of chests sent to China during the five years ending with 1892–93 was 29,000,† while the average number for the preceding five years was 38,000. This diminution of exports is due to the fall in prices consequent on the decline of the demand for Malwa opium in China, which is attributed to the increasing production and use of the Native-grown opium. The fluctuations, also, of late years in the value of silver have, no doubt, affected the trade, and the disturbance in exchange, with a country like China possessing a silver standard, caused by the closing of the Mints in India at the beginning of 1893–94, appears to have had a temporary effect in the same direction. The question of the rate of pass-duty which the trade can bear, must obviously depend upon the price ultimately realised in the eastern market, but it is clear, from the history of the Malwa trade, and from the nature of the political relations with these States, that the duty was never intended to operate as an indirect means of extinguishing a trade that was formally recognised as far back as 1830.

IV. 22,325.
22,139.
22,140.
22,136
25,048.
25,052.
20,729, 25,011, 25,020, 22,374–8.
22,070.

**Export of Malwa opium for consumption in British territory, &c.**

II. p. 347.

114. Some amount of opium, also, is exported from the producing States in Rajputana and Central India for consumption in British territory, and certain Native States. This opium has to be weighed at one of the established scales, paying the pass duty in the same way as the opium intended for export by sea; but a special rate of duty is chargeable, which, at the present time, is fixed at Rs. 725 a chest for opium weighed at Ajmer, and at Rs. 700 a chest for opium passing the scales at any other place. Bombay, Madras, the Hyderabad assigned districts, or Berar, and Coorg obtain their entire supply, and the Punjab part of its supply, for local consumption in this way, while the Native States using Malwa opium are Hyderabad, Mysore and the States under the political control of the Bombay and Madras Governments. The opium for the Punjab, on which, however, the full special rate of Rs. 725 a chest is not charged, passes the scales at Ajmer, and is said to be drawn from the Karauli State of Rajputana, and from Central India. The amount required by the British Provinces and Native States, mentioned above, is weighed at one or other of the scales under the Central India Agency, though three-fifths of the whole comes from Indore. Part of

IV. p. 404, IV. App. VIII.

* Practically the whole of the Malwa foreign export goes to China, so far as the statistics of exports from Bombay show. *See* table on page 289, Vol. II.

† The figures here given in round numbers are taken from the table at page 347, of Vol. II.

this opium is weighed expressly for local consumption in the territories already described, and part, after having been weighed and passed for export by sea, is diverted to this purpose at Bombay on payment of the difference between the ordinary and special rates of pass duty. The whole of this supply amounts, on an average of the last 10 years, to about 3,000 chests annually. II. p. 317.

115. This opium trade, which, as we have seen, is one of very old standing, plays an important part in the agricultural and commercial economy of the opium-producing States, and is a valuable source of revenue to the States themselves, and, in a less degree, to the subordinate Chiefs and to the landowners. The advantages of the poppy crop to the cultivating classes have already been dwelt upon in the paragraphs dealing with the production of opium, which was described by the Minister of Gwalior as the black gold of Malwa. The money-lending and trading classes, also, have large interests in the whole trade, with which the prosperity of many towns in Malwa, and of places like Jhalrapatan in Rajputana is said to be closely bound up. Approximate estimates of the compensation that might be claimed on account of these various interests, should the cultivation of the poppy be prohibited, have been placed before us by the States, and a considerable amount of evidence has been recorded on the subject. It is clear, however, that the States are not willing to accept compensation, and the Maharaja Holkar has expressly said that he does not admit the right of the Paramount Power to require him to prohibit the growth of the poppy within his territories, a matter that will be discussed later. These claims involve questions of extreme difficulty and of infinite complexity of detail, and we found it quite impossible, with the time at our command in India, to make any adequate examination on the spot of the figures and statistics presented to us. The matter would only become one of practical importance should it be decided to enforce, throughout these States, such restriction as would involve the extinction of the export trade. We think it necessary, however, to offer a few observations of a general character upon these estimates. The claims may be classified under three main heads—compensation to the States themselves, the petty Chiefs and landowners; compensation to cultivators; and compensation to money-lenders, traders and others engaged in the opium trade. The compensation to the States is on account of the direct loss of land revenue, and of the income at present derived from various duties and imposts on the manufacture of opium, or on the import or export of the crude or manufactured product, and similar losses, on a smaller scale, would be incurred by petty chiefs and landowners, though these have not been included in the estimates by all States. Some indirect losses also would have to be taken into consideration. The Indore authorities, for instance, have represented that they expended large sums on irrigation works mainly with a view to protect poppy cultivation from drought, and that the prohibition of this crop would alter the conditions on which the capital had been invested and materially affect the return. The loss in customs revenue is capable of being ascertained with more or less accuracy, but the loss of land revenue opens up a wide field of inquiry. The poppy is everywhere regarded as the most valuable crop that can be grown on irrigated land, but is not assessed to land revenue in the same way in all cases. In some States specially high rates are charged on the actual crop, while in others, including the chief States of Malwa, the general rates on irrigated land have been fixed higher than they would otherwise have been fixed on the understanding that poppy will be grown, as a general rule, on all land capable of producing it. Everywhere, therefore, a reduction of land-revenue rates, with the incidental expense of a revision of assessments in some instances, is considered inevitable should the production of opium be forbidden. The extent of this reduction in each case depends mainly on the question of the crop that could be substituted for the poppy. This crop, according to the great majority of the witnesses, would necessarily be wheat. Such a change would involve a material reduction of the land-revenue rates; but no final conclusion on this point could be arrived at without the most careful consideration of a number of variable circumstances, such as the local peculiarities of soil, the period for which wells and tanks can ordinarily be used for purposes of irrigation, the existence of markets for the substituted crops, and, perhaps above all, the acquired knowledge and hereditary predilection of the cultivating classes. On such questions an opinion could only be pronounced by a body of experts thoroughly conversant with the conditions of Indian agriculture after a minute and protracted inquiry in each State. What we do feel justified in saying is that the sudden and complete prohibition of the production of opium would disorganise the finances of a number of the States, and necessitate a change in the system of agriculture in the opium-producing districts, which would deprive the cultivators of a very valuable

Importance of export trade to the States of Rajputana and Central India, and question of compensation. IV. 22,167. 20,658.

IV. 20,791–92. IV. p. 102. 22,214, 21,873.

IV. 22,209.

crop and seriously affect their credit, a point on which most of the witnesses have laid great stress. The claims on behalf of the money-lending and trading classes include compensation for advances made on the security of a special crop that would no longer be permitted; for the value of the stocks of opium now held by them, and for the loss of capital and ruin of their business. On this part of the subject, also, it would be impossible to speak with any confidence without a far-reaching inquiry in each State, but in saying this we wish it to be understood that we do not express any opinion as to the admissibility of the claims put forward by some of Rajputana States under this head. It should be added that the Rajputana claim on behalf of consumers is not, in our opinion, in any sense tenable.

TABLE 11, showing CLASSIFICATION and approximate AMOUNT of COMPENSATION claimed by the PROTECTED STATES in RAJPUTANA and CENTRAL INDIA.

| Name of States. | Classification of Claims. | Amount. |
|---|---|---|
| | | Rx. |
| Rajputana States - - - - | Direct loss to States, petty Chiefs, and Jagirdars | 329,603 |
| | Loss to cultivators - - - - | 449,338 |
| (*See* page 18, Vol. IV.) | Loss to money lenders, traders, and others - | 2,142,301 |
| | Loss to consumers - - - - | 56,547 |
| | Total - - - - - | Rx. 2,977,789 |
| Central India States - - - - | Direct loss to States - - - - - | 708,125 |
| | Loss to cultivators - - - - - | 663,808 |
| (*See* pages 89 and 90, Vol. IV.) | Loss to money lenders, traders, and others - | 230,436 |
| | Total - - - - - | Rx. 1,602,369 |
| | Grand total - - - - | Rx. 4,580,158 |

If a policy of prohibition were to be carried out, as a matter of arrangement with the ruling States, on the basis of payment of full and equitable compensation, the negotiations would, obviously, have to be conducted in no illiberal spirit, and we are satisfied that the award that would finally have to be accepted would be a very substantial sum. The actual figures of the roughly prepared estimates, placed before us on the part of the States, are given in the table above, and a large part of the total sum is claimed as an annual payment.

Whether existing arrangements for transit of Malwa opium to the sea can with justice be terminated.

116. We are now able to come to a conclusion on the second question referred to us by Your Majesty, regarding the Malwa export trade, namely, on what terms, if any, the existing arrangements for the transit of this opium through British territory can, with justice, be terminated. The situation appears to us to be practically the same as it was in 1830. We are of opinion that by paramount considerations of fair dealing and good faith—considerations that have acquired additional cogency from more than sixty years of uninterrupted usage—the Government of India is precluded from withdrawing the right of transit, except with the free consent of the Protected States. It seems probable that the more important States would not be prepared to accede to a measure of this kind. In any case, however, it is clear that any agreement that might be arrived at could only be arranged on payment of large pecuniary compensation, and would involve a heavy loss of public revenue to the Government of India. We are aware that it has been suggested that the present arrangements for the transit of Malwa opium to the sea might be ended, without direct interference on the part of the Government of India, by an enhancement of the pass duty up to a point that would be found prohibitive; but we consider it sufficient to say that the considerations on which our general conclusion is founded would, in our opinion, be equally valid against any such indirect method of extinguishing the export trade.

## II.—*Native States not connected with the Malwa System.*

### *Introductory.*

Course of the present inquiry regarding the remaining

117. We have now to consider the opium arrangements in the other Protected States of India, which cannot be said to have any direct connexion with the Malwa export trade, or close association with its history. Some of these States are quite unimportant and only require a passing reference here. In the Manipur State on the borders of

Assam, in the Himalayan State of Tehri Garhwal, and in the Sindh State of Khairpur opium is produced for local consumption, but the outturn is insignificant. In the case of the small State of Koch Behar, under the Government of Bengal, the cultivation of the poppy was prohibited during the minority of the Chief in accordance with the policy that dictated the same course in the surrounding British districts many years before, and the prohibition was continued by him on his succession. Poppy cultivation has also been forbidden in the small Mahomedan State of Rampur under the Government of the North-West Provinces, under special arrangements which provide for a limited amount of Excise opium being supplied from one of the neighbouring British districts at a comparatively low rate to be issued to the licensed vendors at a comparatively high rate. For the purposes of our Report, the States under the political control of the Bombay Government have been divided into two groups. The arrangements in force in the first group, which falls under the Malwa system, have already been described in paragraph 101, and these arrangements are equally applicable to the second group of States,* with a population of 2,698,157, which have to be referred to here. The only States, therefore, with which the arrangements require to be described are the following: Kashmir and the States under the political control of the Punjab Government, which may be conveniently dealt with together; the Hyderabad State; Mysore, and certain States in the Madras Presidency. We have mentioned in the introductory Section of our Report that opportunity was found for holding sittings at places conveniently situated for the attendance of the representatives of the Punjab Native States. The Commission was unable to visit Hyderabad, but the general views of the Nizam's Government were stated in a communication from the Minister, and the whole subject of opium as affecting that State was fully described by the senior member of the Board of Revenue, an English official in the employment of the Nizam. The opium question is not in any way prominent in Mysore and the Madras Native States, so that the omission to include them in the scope of our local inquiry does not affect the general conclusions at which we have been able to arrive.

Protected States.

IV. p. 499.

IV. pp. 359–60, 500–504.

*Arrangements for Provision of Opium.*

118. In Kashmir, the poppy is grown in Jammu, the southern province of the State, cultivation being free, and the average area under this crop is roughly estimated at 1,709 acres a year. About one-fifth of the opium produced is said to be consumed within Kashmir, and the remainder is exported to the Punjab. The cultivators are required to sell their produce either to State contractors, or to licensed dealers from the Punjab, and half the price realised by them is said to be claimed by the State. A system of licenses for retail vend is also in force, and the annual income derived from these two sources is placed at Rs. 47,000. It appears that under Sikh rule no attempt was made to limit the production or consumption of opium, either in Kashmir, or in the Punjab, and when British rule was established in the latter province, it was not considered advisable to place any restriction on the import of opium from Jammu into British territory, nor was it considered possible to prevent the cultivation of the poppy in the Native States under the political control of the Punjab Government. The individual circumstances of these States differ widely, but for the purposes of this inquiry they may be grouped broadly into two classes; those in which opium is produced in excess of local requirements, and those in which production is comparatively small, and the import for local consumption considerable. In the first group the total area under poppy is believed to be not more than 6,000 acres, and the chief cultivation is to be found in the Hill States, especially in those under the Simla Agency. The amount of opium produced cannot be said to be large in any of these States, but the poppy cultivation is important to them, as their revenues are small, and no import duty is charged on the opium imported into British territory, either from them, or from Kashmir. In the second group the Sikh States, especially Patiala, Jind, and Nabha, are the principal importers of opium. They draw their supplies partly from the Hill States, partly from the British districts where opium is produced, and partly from Malwa. The opium from the last-named source is allowed to be imported in specified quantities, on payment at the Ajmer scales of a specially reduced rate of pass duty, the whole of which is refunded to the States. The reason for this arrangement will be found in the geographical position of the outlying districts of these States in relation to Northern Rajputana, offering as it does great facilities for

Arrangements with Kashmir and other Native States in the Punjab.

V. p. 126.

V. p. 104.

* The principal States in this group are Kolhapur, Sawantwadi, Janjira, Akalkot, and the Southern Maratha and Satara Jagirs.

smuggling Malwa opium, and making it necessary to give them a direct interest, and so to secure their co-operation in stopping this illicit trade.

Arrangements in force with the Hyderabad State.

IV., p. 500.

119. We have next, to examine the opium arrangements with the State of Hyderabad, the great Deccan offshoot of the Delhi Empire. Up to the year 1879–80 this State had paid but little attention to the subject. The consumption of the drug was considerable, and the supply was obtained partly from cultivation of the poppy within the State, and partly by import from Malwa, no pass duty being paid on the amount so imported. As the revenue derived by the State from this source was insignificant, the difference between the price at which opium could be sold in Hyderabad territory and the surrounding British districts respectively was considerable, and this fostered a brisk contraband trade between the two tracts. This fact was brought prominently into notice during the inquiries instituted in the districts having a common frontier with Hyderabad, in connexion with the introduction of the provisions of the Opium Act of 1878. It was then found that the bulk of the opium consumed in the Madras Presidency, where it was till that date untaxed, had been introduced by way of the Nizam's dominions, the frontier of which was too long to be guarded effectively without an excessively numerous and costly preventive force. As no opium was produced in the Southern Presidency, and the cultivation of the poppy had just been prohibited in Berar and the Central Provinces, Hyderabad was

IV., p. 511.

cut off from any imported supply except from Malwa, and this supply could be controlled, because the drug was not mentioned in the subsisting agreement with the Nizam's Government providing for reciprocal freedom of transit between British and Hyderabad territory. Negotiations, therefore, were set on foot, which resulted in the prohibition of poppy cultivation in that State, and in the agreement that all opium

II., p. 370.

required for licit consumption by the Nizam's subjects should be obtained from Malwa. This was on the understanding that the British pass duty, as levied at the scales, should be credited to the Hyderabad State, and it was expressly stipulated that the amount of this duty should not be less than Rs. 600 a chest, except as a matter of future agreement. This arrangement has led to a marked increase in the revenue derived from opium by the Nizam's Government, and to a material enhancement of the retail price in that State. Either of the parties to the agreement is at liberty to withdraw from it on giving

27,903.

twelve months notice of this intention, and it has been stated on behalf of the Hyderabad State, that should the Government of India prohibit opium within British territory, and cancel the existing arrangement, the Nizam would claim the right to re-introduce poppy cultivation in his own dominions.

Arrangements in force with Mysore and Madras States.

II., p. 370.

120. The large State of Mysore was administered as a British Province for about half a century, during which period the small cultivation of the poppy, previously in existence in a few special tracts was discontinued. The opium required for use in the State was imported from Malwa, and, after 1879, the whole arrangements were conducted in accordance with the general provisions of the Opium Act, 1878. In the instrument of rendition, executed in 1881, a special provision was inserted, under which the Chief binds himself to comply with the wishes of the Governor-General in Council in the matter of the production and distribution of the drug, and the system in force up to that date has accordingly been maintained. The small States connected with the Madras Government do not produce opium, but are supplied from Malwa. There is this difference, however, between the arrangement in their case and that with regard to Mysore, that the duty, less cost price is credited in the former case to the Government of India, and in the latter, to the importing State.

*Consumption of Opium.*

The consumption of opium in these Native States.

II. p. 356.

V. p. 126.

III. 16,218, 16,272, 16,280.

121. The character and extent of the opium consumption varies very much in the different States with which we have just dealt. In the States under the political control of the Madras Government there can hardly be said to be any custom of taking opium. The use of opium is also limited in Mysore, and in the second group of the States under the Bombay Government referred to in paragraph 117. As regards Kashmir the total amount said to be consumed is small, and only the Dogras and Sikhs and others from the Punjab are believed to take opium, while in the Punjab hill States it is estimated that from 5 to 8 per cent. of the inhabitants are consumers. The case, however, is different in the Sikh States and Hyderabad. The annual rate of consumption in Patiala is 426 grains, or, if Sikhs only be taken, about 946 grains per head, 160 grains in Jind, and 366 grains in Nabha. These rates, moreover, are founded on the returns of taxed opium, and it would probably be unsafe to assume that this represents the whole amount con-

sumed. In Hyderabad the average yearly consumption is returned at 31 grains per head for the whole population, but in the city the rate is about 124 grains. Opium is generally taken in the form of pills, but the custom of drinking *Kasumbha* is not followed, either in the Sikh States or in Hyderabad, though in the former the decoction made by steeping poppyheads in water is used to some extent. The smoking of preparations of the drug is little known. The practice is authoritatively forbidden in the Patiala State, and the keeping of shops for this purpose is said to be prohibited by law in the Nizam's dominions, though it is admitted that in practice the police do not interfere with *Madak* shops, of which there are a large number, in the Hyderabad city.

IV. p. 502.

V. p. 125.

IV. p. 501.

27,904.

### III.—*General Conclusions regarding the Protected States.*

General conclusions as to the use of opium the Protected States of India.

122. It remains for us to summarise our general conclusions regarding the use of opium in the Protected States. In some of these States, especially in the South of India, the opium habit has practically no existence, and these conclusions, therefore, are mainly applicable to the Sikh States in the Punjab; to the Rajputana and Central India States; to Baroda and the States in Gujarat, Kathiawar and Cutch, and to Hyderabad. It may be said broadly that in these States opium occupies the same place as in British India. It is used as a domestic remedy, as a protection, so far as the belief of the people goes, against fever and chills, as a stimulant in the case of exhaustion from fatigue and exposure, and as a restorative in the declining years of life. It is also used as an aphrodisiac. The practice of administering opium during infancy is common throughout these States, and in Rajputana and Central India, is more widely prevalent, and probably of greater antiquity, than in other parts of the country; while in the same region, and in the group of States where Rajput influence is dominant, the customary use of opium at ceremonies and in social life has its strongest sanction. We think that it must be recognised that the social obligation to offer opium on these occasions is weaker than it was, owing to the operation of various causes which have been already discussed, but the evidence has shown beyond doubt that these customs still possess a very real hold on important classes of the population. The taking of opium by young men is regarded with disfavour, though this feeling is less marked among the Rajputs than among other classes, and smoking preparations of the drug is not only popularly condemned, but has been made the subject of prohibitory legislation or regulations in a number of States, though it may be doubtful how far the prohibition is really operative, except perhaps in Baroda. We are satisfied that these popular uses of opium, whether judged by the character and scope of the evidence given before us, or by the broad lessons to be learnt from the growth of population, cannot be said to cause any general deterioration, moral or physical, and we say this in full knowledge of the fact that among some of the higher classes of the community cases of excess, though never common, are probably more frequent in Native States than in British India. The Foreign Minister of Patiala, the chief Sikh State, speaks of the practice of taking opium as being moderate and reasonable, while excess is "extremely limited." The Minister of Hyderabad has stated emphatically that the use of opium does not constitute a public evil in that State, and the view expressed by the Maharaja Holkar, with reference to Indore, that the consumption of opium is, as a rule, moderate, and that a moderate use is not prejudicial in any way, has received the fullest support and confirmation from the evidence regarding the other Native States in that part of India. We consider, moreover, that the remarks on this subject made by Mr. Crosthwaite, the Agent to the Governor-General in Central India, deserve special weight. Mr. Crosthwaite is not prepared himself to say that the use of opium is either necessary or beneficial to health, though he speaks with confidence as to this view being held by a large proportion of the Native population. He points out, however, that if the use of opium necessarily or even generally led to excess, and so to the degradation of the consumers, these results would certainly be traceable in the statistics of population and in the decline of the village communities of Malwa, where opium consumption is relatively widespread and is known to have been in existence for centuries. But, in reality, no such decline is to be found, and the figures of the Census of 1891 show an increase of 9 per cent. in the population of these States during the preceding ten years. As to the general disposition of the people of the Protected States and their rulers there can be no question whatever. A large majority of the population look upon the use of opium in the ways already described, as an ordinary incident of their daily life, not open, at any rate, to objection. Interference with their personal habits and social customs would assuredly arouse feelings of resentment and discontent, which would be intensified in the case of the States where the pecuniary interests of the cultivators

III. 16,219–20.

IV. p. 499, para. 3.

IV. p. 102.

21,817.

21,812.

III. 16,316. IV. 24,622. III. 16,225, 16,263, 16,331, 20,435, 20,604, 20,772, 21,655, 21,814, 21,873, 22,217, IV. p. 102, 27,916, 27,949–50, IV. p. 499, pars. 10 and 11.

and other classes are vitally affected. The Chiefs of the Sikh State of Nabha and of the petty State of Malia in Kathiawar are opposed to any use of opium, so far as their personal views go, and would be prepared to accept a policy of prohibition, if adopted by the Government of India, but these views are quite exceptional. The Native representatives of the more important States, as well as Government officials, who speak from large experience and intimate knowledge of the people, have given weighty expression to their apprehensions of the embarrassment and danger that would be caused by an attempt to enforce a policy which would inevitably be regarded as harsh and unjust. We have elsewhere stated our conviction that it would be impracticable to limit the consumption of opium in British India to medical purposes, strictly so called, and we are strongly of opinion that such a measure would be even more clearly impracticable in the case of the Protected States. It could only be enforced, so far as any real enforcement might be possible, by the employment of an army of spies and informers, and by a constant intrusion into the domestic concerns of the people; and it seems to us impossible to contemplate the results of this action with indifference. We are deliberately of opinion, and we speak with a serious sense of our own responsibility in the matter, that no Government, situated as the Government of India is situated, can afford to disregard the representations that have been made on this subject.

Right of interference to prohibit the use of opium in Protected States. II. 2523.

123. Finally, we consider it incumbent upon us to express an opinion as to the right of the Government of India to require the Protected States to carry into effect a policy of prohibition. This seems especially called for, because some of those who advocate this policy are apparently prepared to recommend recourse to compulsion, if necessary. We do this, however, with some reserve, as we fully recognise that the question is one of great delicacy. It has been mainly discussed in our Proceedings, in relation to the Rajputana and Central India States, and the matter, of course, has special importance in the case of the States that have a share in the export trade, though so far as the consumption of opium is concerned, all the independent States are interested in it. The enforcement of a policy of this character necessarily means an interference in the internal administration of these States, and it seems to be placed beyond question that the right on the part of the Paramount Power to exercise such interference is limited, by Treaty obligations and well-understood usage, to the single case of intolerable mis-government. It is, no doubt, true that the Government of India has on various occasions exerted its influence by way of advice and remonstrance, which must always carry more or less authority, with the object of putting an end to offences against public morality within the terrorities of Protected States. These, however, have been offences universally admitted to be such by the civilised opinion of the world, and we feel bound to accept the views expressed by the Agents to the Governor-General both in Rajputana and Central India, that in the history of the relations of the Government with these States there has been no precedent for any such interference as the prohibition of the use of opium, except for medical purposes, and the stoppage of the opium trade would constitute.

IV. 20, 782, 21,858.

124. The case of suttee, has been particularly urged upon our attention as being a justification for the contemplated interference in the matter of the opium consumption and trade, and we have thought it right to ascertain the nature of the action taken by the Government of India in that case. Lord William Bentinck made suttee a criminal offence within the limits of British India in December 1829, but there was no attempt to force the reform at once upon the Protected States. It was left to the political officers associated with these States to induce them, by encouragement and guidance, to follow the example that had been set by the Government of India. Six years after the introduction of the regulation making suttee penal in British India, the widow of a Bombay Chief in Mahi Kantha was burnt alive, notwithstanding the protests of British officers; and even in 1861, or 32 years later, the Government of India found it necessary, owing to the not infrequent occurrences of suttee in Rajputana, to issue* orders that the Native Chiefs should be informed that neglect on

IV. p. 110, para. 7.

* "It should be plainly stated to the Chiefs that, although as regards the occurrence of sati (suttee), the past year admits of a favourable comparison with preceding years, yet that of late years the Governor-General in Council has reason to know that in some Native States the chief authorities have not used that diligence to repress and punish the crime which the Governor-General in Council has a right to expect from them.

"It should also be stated that punishment by fine be resorted to, and that whenever local means of imprisonment are not available, the imprisonment should take place in a British gaol when the law admits of it.

"Further, it should be stated to the Chiefs that in any case in which the Government of a Native State shall neglect to exert itself to stop the perpetration of a sati, or to bring the offenders to punishment, the Governor-General in Council will consider the propriety of reducing the number of guns with which the Chief of the State is saluted, in order that it may be made plain to all India that the Queen's Government view such neglect with grave displeasure, and hold those who are chargeable with it in diminished honour":—*Letter from the Foreign Dept. Govt. of India to the Agent Governor-General, Rajputana, Nov.* 12, *dated the* 20*th December* 1861.

their part to exert themselves to prevent the perpetration of this crime would be viewed with grave displeasure, and made a ground for reducing their salutes to show that they were held in diminished honour.

We are of opinion, however, that the case of suttee can be distinguished, by the clearest line of cleavage, from the habit of taking opium. The prohibition of suttee was based on broad ethical grounds. The burning alive of widows, whether under the sanction of religion or not, was repugnant to civilised humanity, and, it may well be inferred, opposed to the real instincts of the people of India as being inhuman. The practice, moreover, at any rate in modern India, was a strictly aristocratic and sacerdotal practice, never really prevalent among the population, and there is good reason for believing that Lord William Bentinck's action was strongly supported, if not suggested, by enlightened public opinion in India. It would obviously be impossible to place the habit of taking opium in the category of crimes like suttee, and we have had convincing evidence not only that the habit is not opposed to the popular sentiment in the Protected States, but that any attempt to suppress it would be in complete opposition to the wishes of the mass of the people, as well as to those of the Chiefs, with one or two exceptions. It seems to us, therefore, that if the Government of India were to impose on these States the obligation to prohibit the use of opium, it would be going beyond the line of interference marked out by Treaty obligations and public pledges, and abandoning the attitude which they have adopted even in the case of reforms carrying behind them the weight of civilized opinion. Nor do we think the argument a sound one that, because suttee and other practices, closely associated with the Hindu religion, could be repressed without causing general discontent, the apprehensions expressed by numerous witnesses as to the result of prohibiting the consumption of opium may safely be regarded as having no real foundation. These practices never touched the home life of the people, but the opium habit, quite apart from the question of justification for interference, stands on ground of its own as being intimately bound up with the personal and domestic customs of the general population, and the effect of prohibition would, therefore, be proportionately far reaching.

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## SECTION IV.

### The Export of Indian Opium to China and the Straits.

125. We have now to deal briefly with the question of the production of opium in India as affected by the moral and political considerations arising out of the connexion of the opium trade of India with China. The question of China was not explicitly referred to us by Your Majesty, but it is obvious that our inquiry would have been incomplete had we not devoted some considerable attention to it.

Comparative bulk of exported and excise opium.

II. p. 345.

126. Of the Bengal opium manufactured at the Government factories of Patna and Ghazipur, that which is intended for export is technically known as "provision opium," and that reserved for consumption in India is called "excise opium." The relative amounts of the two manufactured in the year 1892–3 were 40,506 chests of provision opium, as against 2,109 chests of excise opium. Taking the average of the last 10 years, the respective quantities were 52,419 chests of provision opium, as against 4,023 chests of excise opium.* Of Malwa opium, the figures for 1892–3 are 27,268 chests passed for export by sea, as against 3,348 chests passed for consumption in India. Taking the average of the last 10 years, 33,758 chests were passed for export, against 3,093 chests passed for consumption in India.

* A maund = 82·28 lbs.

II. p. 347.

127. The quantity of both Bengal and Malwa opium exported to China and the Far East is thus far larger than that consumed in India, to which it bears the proportion of about 12 to 1. It is plain, therefore, that the financial interests of India are far more deeply concerned in the export trade than in the home consumption of opium. The financial aspects of the question are discussed in the next Section of our Report, together with the effect of the stoppage of the export trade upon the question of exchange.

Quantity of opium exported from India.

II. p. 389.

128. The following table, which is based on the return presented to us by the Government of India, gives the number of chests (of about 140 lbs. each) exported to different countries during the last 10 years. Of the total number of chests exported from India during the year 1892–3, 59,771, valued at Rx. 7,317,577, were despatched to China direct.

Table 12, showing the Number of Chests (of about 140 lbs.) exported.

| Country to which exported. | 1883–4. | 1884–5. | 1885–6. | 1886–7. | 1887–8. | 1888–9. | 1889–90. | 1890–1. | 1891–2. | 1892–3. |
|---|---|---|---|---|---|---|---|---|---|---|
| China | 83,728 | 75,391 | 76,115 | 83,124 | 76,815 | 72,891 | 70,102 | 70,855 | 70,805 | 59,771 |
| Straits Settlement | 7,320 | 10,134 | 10,728 | 11,896 | 12,368 | 13,995 | 13,749 | 13,915 | 15,035 | 12,609 |
| Cochin China, &c. | 771 | 910 | 1,000 | 1,150 | 670 | 725 | 1,050 | 480 | 880 | 2,170 |
| Java | — | — | — | — | — | — | — | — | 125 | 450 |
| Philippines | — | — | — | — | — | — | 20 | 280 | 470 | 170 |
| Ceylon | 85 | 107 | 77 | 94 | 102 | 90 | 119 | 103 | 113 | 127 |
| Mauritius | 44 | 25 | 19 | 38 | 67 | 5 | 60 | 55 | 53 | 53 |
| Réunion | 3 | 4 | 7 | 1 | — | — | — | — | — | 1 |
| East Africa | 11 | 7 | 7 | 16 | 19 | 18 | 16 | 17 | 6 | 10 |
| Natal | 3 | — | 2 | 1 | 1 | 13 | 2 | 1 | 6 | 5 |
| United Kingdom | — | — | — | 19 | 54 | 51 | 48 | 47 | 61 | 17 |
| Other countries | — | — | 1 | — | — | 1 | — | — | 4 | 1 |
| Total exported | 91,963 | 86,578 | 87,956 | 95,839 | 90,096 | 87,789 | 85,166 | 85,753 | 87,558 | 75,384 |

II. 5427, 5346, 5375, 5392.

129. We may point out that according to information before us the amount of opium here returned against the Straits Settlements is far too large, and that against Java too small.† Opium is shipped from India to the former for distribution to Siam,

* The figures of excise opium are given by the Government of India in maunds. For the purpose of comparison, they have been reduced to provision *chests* at 1·70 maunds per chest.

† The totals in the above table are no doubt accurate, but the exporters do not appear in some cases to give the details of distinction correctly. The French and Siamese Governments have State monopolies of the import and sale of opium. The former Government imports to Saigon direct from Calcutta. The latter takes from 1,000 to 1,200 chests annually from Singapore. There is a large consumption of opium not only in Java, but also in the Dutch possessions in Sumatra, Borneo, the Celebes, and the Moluccas. In some of these tracts the Dutch Government, reserving to itself the right of import, brings opium from India and the Levant and supplies both kinds to the licensed vendors. To other tracts the licensed vendors are allowed to procure their own opium, which they appear to get mainly from Singapore. The total amount of opium legitimately imported in these ways into Dutch possessions in 1893 seems to have been equal to about 3,800 chests. In addition, the amount smuggled is admitted to be large. Some Dutch writers estimate it to be equal to the licit supply.

II. 5369–72.
V. p. 160.
V. p. 146.
V. App. XXVII.
V. p. 344.
Friend of China, XII., p. 61,260.

Tonking, and the Malay Archipelago. Witnesses informed us in Calcutta that the great bulk of the recorded imports into Singapore probably left the Colony again for other ports. In the Dutch possessions the drug is a State monopoly. The French Government in Tonking and Cochin China, again, has established a State monopoly of the manufacture of the smoking preparation mentioned under the title of *Chandu* in the Second Section of this Report and described in Sir William Roberts' Memorandum. The opium used in this manufacture is obtained from Calcutta.

V. pp. 146-7.
V. pp. 344-5.

130. We now proceed to discuss the moral and political aspects of the question as affecting China. In considering this branch of our subject it is obviously impossible for us to arrive at so definite and conclusive a judgment with regard to China as with regard to India. The moral and physical results of the use of opium in China must be gathered from the evidence of witnesses, and with few exceptions we had no opportunity of seeing these witnesses and of cross-examining them upon their statements. The political aspect of the question must depend largely on the view taken of some much controverted events in history. Subject to these necessary limitations, we proceed to give a brief summary of the results of our inquiry.

Scope of the inquiry as regards China.

131. Prior to our departure from London, we took the evidence of 17 missionaries, representing various Societies, who had been resident in China for longer or shorter periods, and of Mr. B. Broomhall, the general Secretary of the China Inland Mission. The evidence of these witnesses was practically unanimous as to the evil effects of opium-smoking upon the Chinese, though that of Dr. W. Lockhart, a medical missionary of the London Missionary Society, was less pronounced than that of the others. We also took the evidence of one medical man who had been in private practice for 18 years in Canton and Hong Kong, and of a retired Government medical officer, who had been in the Straits Settlements for 25 years. The evidence of these two witnesses was considerably less adverse to the practice of opium smoking than that of the missionaries. We heard, also, the testimony of four gentlemen connected with commerce, of whom two were strongly adverse to opium, and two took a more favourable view of the practice. The other witnesses, with regard to China and the Far East, were Sir Thomas Wade and Mr. Lay, who gave evidence principally with regard to the negotiation of the Treaty of Tientsin and the Convention of Chefoo. Mr. S. Lockhart, the Protector of Chinese in Hong Kong, also gave evidence, stating that in his opinion it would be no more possible to enforce the prohibition of opium in Hong Kong than that of drink in the United Kingdom. We received, also, communications in writing from Sir G. Des Vœux, late Governor of Hong Kong, Sir Hugh Low, formerly Administrator of Perak, both of whom were opposed to any further interference, and from Mr. Duff, a merchant in China of 30 years' standing, whose opinion is—

Evidence taken in England.

I. 1668.

I. 1772.

I. 790, 1751, 1618, 2012.

I. 1391.

V. p. 113.

I. p. 111.

"that in the circumstances of their living, food, climate, and habitations, opium has no deleterious effects upon the Chinese; indeed, quite the contrary, for it is a positive need, and they could not do without it."

A Note on the history of opium and the poppy in China, by Dr. Edkins, formerly a missionary, and now in the China Customs Service, at Shanghai, will be found in the Appendices to our Report. The author shows that the poppy (*papaver somnijerum*) was cultivated in China as early as the 8th century.

I. p. 146.

132. We subsequently addressed circular letters of interrogatories to the Governments of the Straits Settlements and Hong Kong and to Your Majesty's Minister in China, the replies to which are given in the fifth volume of our Proceedings. We may briefly summarise the results of these inquiries.

## Straits Settlements.

133. From the Straits Settlements reports were forwarded to us from several medical officers. The majority hold that opium, taken in moderate quantities, is not deleterious. If taken in excess the effects are degrading. The list of witnesses so reporting, includes Mr. Haviland, M.B., the curator of the Raffles Museum; Dr. W. C. Brown, J.P., private practitioner, Penang; Mr. T. S. Kerr, M.B., principal civil medical officer; Mr. W. Gilmore Ellis, M.D., M.R.C.S., superintendent of the lunatic asylum; Mr. J. C. Mugiston, colonial surgeon, Singapore; and Surgeon-Major D. O'Sullivan, stationed at Penang.

Summary of opinions as to moral and physical effects of opium.

V. pp. 146-184.

134. Two missionaries, the Rev. A. Lamont, of the English Presbyterian Church, and Mr. Shellabear, late R.E., working in connexion with the Methodist Episcopal Church of America, agree in the view that the effects of the opium habit are degrading. They strongly condemn the habitual use. The reports from officials of the Government



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V. p. 148 of the Straits Settlements as to the effects of the use of opium in moderate quantities are mainly favourable. Mr. Maxwell, the Colonial Secretary, in summing up the replies which he has transmitted to us, agrees with those who think that opium-smoking does no harm to the Chinese, if practised in moderation, observing that moderation is the rule amongst the Chinese in that colony. In the case of Malays the injurious effects, physical and moral, are by general consent more evident. Following Dr. Brown, the oldest private medical practitioner in Penang, Mr. Maxwell, estimates that, of the Chinese adult males, about one-half are consumers. Three per cent. are slaves to the habit.

V. p. 173. 135. We may, in conclusion, quote from a communication received from Mr. John Anderson, J.P., merchant, Consul for Siam, and 32 years resident in the Straits, dealing with the habit of smoking opium. He writes as follows :—

"If its use be abused by excessive indulgence, the effects morally, physically, and socially, must decidedly be prejudicial to the consumer. Its use in moderation, as a stimulant to the system of men who engage in constant hard and trying physical labour, in my opinion, helps to the maintenance of the working powers."

* * * * * *

"Some of the best and most capable Chinese artisans at the dock and machine-shop works and foundries in Singapore (blacksmiths, boiler-makers, rivetters, &c.) are opium users."

* * * * * *

"If it were desired, and if it were possible, to stamp out the use or abuse either of alcohol or of opium, I should certainly urge the stamping out first of the use or abuse of alcohol. Of the two, the latter, in my opinion, is productive of the greater harm and misery."

We may add that in this last observation the majority of the witnesses from the Straits Settlements concur.

## Hong Kong.

Summary of opinions as to moral and physical effects of opium.

136. The interrogatories addressed to Hong Kong elicited replies almost identical with those received from the Straits Settlements. The Rev. John Chalmers, of the London Missionary Society, Ho Kai, a Chinese non-official doctor, and Tong Sing, a Director of the Tung Wa Hospital, strongly condemned the opium habit. The official opinion was favourable to the moderate use, and the list of such witnesses was long. It included men whose position should certainly ensure independent and honest judgment. The names are given in the foot-note below.*

V. p. 181–212.

V. p. 143. 137. Sir George Des Vœux, late Governor of Hong Kong, gave his opinion on the favourable side.

"For the consideration of the opium question the Colony of Hong Kong furnishes an object lesson the value of which could hardly be surpassed. Of its 220,000 inhabitants some 200,000 are Chinese, and wages, as compared with those of the mainland, being high, they are thus enabled to indulge more freely in the habit of opium-smoking, and they certainly do not fail to avail themselves of this ability. . . . All things considered it is probable that the population of Hong Kong smokes more opium than any other of equal number in the world, and yet relatively to the conditions of its existence, it is extraordinarily healthy, while for activity and industry it could scarcely be surpassed."

V. p. 192. 138. We may also quote the following extract from a communication received from Mr. Wodehouse, police magistrate at Hong Kong :—

"The social effects are more domestic than social, and are not characterised by any of the peculiarities which make a drunkard a nuisance to society at large as well as to his own domestic circle. They lie in the direction of impoverishment of the family, neglect of household duties, and other such tendencies. The general effects one notices in the *morale* of an individual given to the use of opium, are a general shiftiness of character, secretiveness, capricious memory, nervelessness, want of energy, and incapacity in the discharge of his avocations. The physical effects are in keeping with these symptoms, hollow drawn features, emaciated form, vacant looking eyes. All these characteristics however that I have mentioned are found noticeably only in the confirmed smoker, and if existing in the germ in the moderate consumer are not necessarily apparent, nor are they of necessity developed by a continuance of moderate consumption. Taking the Chinese population of Hong Kong in its entirety, although it is probable that the great majority of the male adults are consumers of opium, and although they have as much opium at their command as they may desire, there is nevertheless an entire absence of any general appearance of either moral or physical deterioration. The appearances are those of a busy, thriving, cheerful, well-to-do population, without a trace of any of the characteristics that one would find in a community debilitated by some known cause such as scarcity of food, epidemic of sickness, and so forth."

## China.

Summary of opinions as to moral and physical effects of opium.

139. The replies we received from China, like the evidence tendered to us in London, were of a conflicting character. By the majority of the missionaries of every Christian communion in China the use of opium is strongly condemned. Other missionaries take a less decided view. Of these last two may be quoted. The Rev. W. Ashmore, of the

V. p. 214.

* J. Clarke, Chief Justice. Edward Ackroyd, Puisne Judge, Supreme Court. H. G. Mitchell-Innes, Treasurer, Hong Kong. ("Effect of moderate smoking, nil.") R. Murray, Rumsey, R.N., harbour master. ("Physical effects not apparent to ordinary observer.") PH. B. C. Ayres, C.M.G., colonial surgeon, as above. W. Stanton, police inspector, as above. Alexander Turnbull, M.D., R.N., Deputy Inspector-General, as above. G O. Preston, M.B. Surgeon Col., as above. James Cantlies, M.A., M.B., F.R.C.P., Department Public Health, as above. J M. Atkinson, Government Civil Hospital, as above

American Baptist Mission, 43 years a missionary in China, states that some men will use opium for years and not show marked results. The Rev. A. Bone, an English Protestant missionary, says:—

"The effects of opium vary, but it appears to me, that the ordinary Chinese have but a poorly developed moral sense on many matters, in regard to which the Christian nations of Europe hold decided opinions. The effects of opium, also physically, cover a wide range of experience. Many who smoke but twice or thrice a day do not appear to suffer any physical weakness. I question frequently men who tell me they have smoked for years, and no marks of physical deterioration are very manifest." V. p. 218.

140. In the British Consular service in China the prevailing opinion is that opium-smoking in moderation is not harmful, and that moderation is the rule. The evil effects of excess do not thrust themselves prominently on the notice. A minority of the Consular service condemn the use of opium in any form as essentially bad. The medical opinions were in general accord with those of the Consular body. We may quote, for instance the statement of Dr. Rennie, referring to the Island of Formosa, where he resided for seven years; he writes that—

"By a high principled Chinaman, the use of opium would be pronounced degrading; but I do not think such is at all the general opinion. * * * * A new arrival usually finds that his ideas, moulded on statements current at home, are immensely exaggerated; he seldom comes across that type of the degraded opium victim with the description of whom we have in our earlier days been so familiar. Still, after more mature experience and looking into the question with an unbiassed mind, he must admit that the habit is an evil. But what race has no pleasant vice? Opium is a solace to the wretched and luckless, and a stimulant to the hard-working and poorly-fed breadwinner, too often handicapped by malaria in the struggle for existence. As with most of nature's gifts to suffering humanity, abuse often converts the blessing into a curse. But look at the matter how we will, whether or not in its use or abuse it is a danger to the individual, to society, or to the State; we most unhesitatingly declare that the opium habit is in every respect a lesser evil than the consumption of alcohol." V. p. 218.

We may also quote the following from Dr. Matthews, a medical missionary:—

"It occurs to me to add in connexion with the above answers that, upon my arrival in China, I was naturally prejudiced with regard to the opium habit, and that it is only on conviction that I now speak. To emphasise my position it is right to add that, apart from the interest I have taken in this matter for some years past and the constant desire to avail myself of all practical information, is the fact that as editor of the only medical journal in China, I have had more extended facilities for examining into the question than ordinarily falls to the individual medical man. Such being the case, I, though in all diffidence, state that it is my firm conviction that the evils of the opium habit, though they are many and great, have been exaggerated, and the good derived from it but little recognised. With regard to contrasting opium and alcohol, it seems to me but the conflicting of essential requirements of the eastern and western worlds." V. p. 331.

We may also refer particularly to the answers of Dr. Myers, who, like Dr. Matthews, has made the effects of the opium habit the subject of special observation and inquiry. V. p. 324.

141. On a review of the whole evidence in regard to opium-smoking among the Chinese, we conclude that the habit is generally practised in moderation, and that when so practised, the injurious effects are not apparent; but that when the habit is carried to excess, disastrous consequences, both moral and physical, inevitably follow. Assuming this conclusion to be well founded, we may fairly compare the effects of opium-smoking among the Chinese population to those of alcoholic liquors in the United Kingdom. General conclusions as to the effects of the opium habit on the Chinese.

142. We now turn to the political aspect of the question. References to past history are a prominent topic in the speeches and pamphlets of those who are working for the prohibition of the export of opium from India to China. We do not feel that we are called upon, as a Commission, to pass a judgment on the disputed facts of history, nor are we qualified to do so. This aspect of the question has been dealt with in a Memorandum by our colleague, Sir James Lyall, supplemented by Notes prepared for us by Mr. Dane, of the India Civil Service, which are appended to our Report. We wish to express our general concurrence in the conclusions at which our colleague has arrived, that opium was exported from India to China before European nations appeared in the Indian seas; that opium-smoking was a habit in existence in China before British rule began in India, and at a time when British merchants took little or no part in the opium trade, and that to speak of opium as having been forced upon the Chinese is, to say the least, an exaggeration. Political and historical considerations. VII. p. 64. See infra, p. 120.

143. It is less necessary, however, to review the history of the past, because the present relations of the trade between India and China are regulated by the Chefoo Convention, which was ratified as recently as the year 1885. Opium had been [illegible] as an article of import into China by the Regulations supplementary to the Treaty of Tientsin in 1858, the duty of 30 *taels** per chest, which was then imposed upon the Present position of Chinese Government in respect to imported opium.

* A tael is a piece of silver weighing 1⅓ oz.

China 3 of 1882, C. 3395, p. 45.

drug, being estimated by Lord Elgin to be about 5 per cent. *ad valorem*. It had been subjected also to a varying rate of *li-kin*, or internal transit duty, at the different ports of entry, as the Chinese Government might think fit.

Do., p. 56.

China 3 of 1886, C. 4735. p. 5.

144. Under clause 2 of the Additional Article to the Convention of Chefoo, the *li-kin* duty was finally fixed at a uniform rate not exceeding 80 *taels*, and the consolidated duty of 110 *taels* per chest is levied by the Imperial Maritime Customs at the port of entry, before the opium can be taken out of bond. In a despatch addressed to Lord Granville, then Secretary of State for Foreign Affairs, by Sir Thomas Wade, British Minister at Peking, dated the 15th of June 1881, it is stated that although his Excellency Tso had, in the first instance, recommended a *li-kin* duty of 120 *taels*, Grand Secretary Li, after a little fencing, had reduced his colleague's demand to 80 *taels*. This was the amount at which, after protracted negotiations, it was finally fixed in 1885,

China 3 of 1882 (C. 3395), p. 16.

VII. App. D.

and Lord Kimberley, then Secretary of State for India, in his despatch to the Government of India, dated the 22nd of January 1885, used the following language :—

"You will observe that the Chinese Minister's Memoranda of March 12th, 1883, and of September 27th last,* admit unreservedly that the agreement now under negotiation is of the Chinese Government's own proposing and includes all that they desire."

Additional Article, Cl. 7 (3 of 1886), p. 6). Treaty, Cl. xxvii. Elgin Corres., 1859, p. 351. Regulations, Cl. 3 and 5, Elgin Corres., p. 432, Hansard, 352, p. 316.

145. The existing regulations, therefore, must be taken to be in accordance with the wishes of the Chinese Government. The Convention is terminable by either Government at 12 months' notice, in which case the provisions of the Treaty of Tientsin would revive, and the Chinese Government would be at liberty to levy *li-kin* at any rate they might think proper. In 1897 the Chinese Government could give notice of a revision of the Tariff and Commercial Regulations under the Treaty of Tientsin, to take effect from 1898. They would then be at liberty to raise the import duty to any rate they think fit, or to include opium in the category of contraband, as ammunition and salt are included under the existing provisions. With regard to the future, we have the declaration of Sir James Fergusson, as Under Secretary for Foreign Affairs, made in the House of Commons on April the 10th, 1891 :—

"That if the Chinese Government thought proper to raise the duty to a prohibitive extent, or to shut out the article altogether, this country would not expend 1*l.* in powder or shot, or lose the life of a soldier in an attempt to force opium upon the Chinese."

146. We come, therefore, to the conclusion that at the present time there is nothing in the attitude of the British Government that can fairly be described as forcing opium on the Chinese.

Discontinuance of exports from India impracticable and useless.

147. We now return to the general results of our inquiry. We have pointed out that the evidence as to physical and moral injury caused by the consumption of opium by the Chinese is conflicting, and we are of opinion that to stop the trade in Bengal opium would have no practical result in reducing the use of the drug. We are satisfied that the place of the Bengal opium would be taken either by Chinese-grown produce or by that from Malwa or other countries. As to the amount of home-grown opium in China, it is impossible to obtain accurate statistics ; by some witnesses it has been stated to be five times the amount of the imported drug ; by others it is placed at a smaller amount. From the Consular Reports, however, we gather that the poppy is cultivated in 16 out of the 18 provinces of the Empire, that its cultivation is increasing, and that the produce has completely driven the Indian article out of many parts of China. The importation of the latter, accordingly, is diminishing, and, except in certain coast provinces and in the Treaty Ports, its use is chiefly confined to the upper classes. In the third Section of our Report we have shown that it is impossible for the British Government, consistently with its position as Paramount Power in India, to stop the export of Malwa opium, which constitutes more than a third of the whole export from India,† and it is certain that if the Government were to stop the export of Bengal opium, the production and export of Malwa opium would be proportionately increased. It may be added that Persian opium already competes seriously with that from India in some provinces. The Financial and Commercial Returns published by the Government of India in 1894 (p. 67) show that in 1893 about 12,000 chests of Persian and Turkish opium were imported into China. It is reported by the Consuls that in Formosa the Indian opium has been almost completely superseded by the supply from those countries.

Consular Decenn. Reports, 1893.

Consular Dec. Report, pp. 445, 483.

* Given as the 30th September in Return, C. 4448 (5 of 1885).

† Average of last 10 years : Bengal, 52,000 chests ; Malwa, 33,000.

148. Upon the whole matter, we adopt as our own the conclusions of Mr. O'Conor, Your Majesty's Minister at Peking :— V. p. 229.

"If the use of the drug in China depended upon the supply received from India, it might be a practical question what measures could or ought to be taken to discourage its importation. But, in my opinion, this is not the issue. The quantity of opium produced in China is increasing enormously; even the nominal prohibition of the cultivation of the poppy no longer exists throughout, I may say, the whole Empire; and were the importation of Indian opium to be stopped, China would, in a few years, so increase her production as not only to supply her own wants, but probably to export opium to foreign countries."

149. We may add that this view is shared by most of the missionaries who have answered our interrogatories. We quote the following replies to our question: "If "the supply of Indian opium were cut off, what would be the effect on opium-"consumers in China?" The Rev. Dr. Dudgeon :—

"At present it would be without any effect; the smokers would smoke more of the native." (V. p. 230.)

Dr. Atterbury :—

"The stoppage of the Indian supply would lead to increased use of the native article." (V. p. 232.)

The Rev. Dr. Griffith Johns :—

"The opium-consumers in that case would resort to the Chinese-grown opium, that is, unless the growth of "the native article were effectually stopped by the Chinese Government." (V. p. 265.)

The Rev. J. Macintyre :—

"We are already independent of Indian opium in Manchuria. The Chinese article has run out the foreign. ". . . . Now that the Chinese Government has legalised the growth of native opium, the quantity "cultivated is already more than suffices for local consumption." (V. p. 272.)

## SECTION V.

### Financial Considerations.

150. In dealing with the subject before us, it is evident that great weight must be attached to financial considerations. We have to consider not only the actual loss of revenue, but also the collateral expenditure that would be necessary, first, in the direction of maintaining an effective system of preventing illicit production and sale of opium, and, secondly, by way of compensation to various interests concerned in the British Provinces and the Protected States of India. Each of these points will be treated in succession.

Direct loss or revenue.

151. As regards the direct loss of revenue we have before us a comprehensive statement furnished by the Secretary to the Government of India in the Department of Finance and Commerce, showing for the last 14 years the gross and net revenue derived from opium, whether under the head of Opium or Excise. For the last year of the series, 1893–94, the Budget Estimate alone was available at the time the figures were compiled. The information thus provided is summarised in the following statement:—

II. 341.

Table 13, showing Revenue from Opium between 1880–1 and 1893–4.

| Head of Account. | 1880–81. | 1893–94 (Budget Estimate.) | Averages. | | | |
|---|---|---|---|---|---|---|
| | | | 1880–81 to 1883–84. | 1884–85 to 1888–89. | 1889–90 to 1893–94. | 1880–81 to 1893–94. |
| REVENUE. | | | | | | |
| Credited to Opium:— | Rx. | Rx. | Rx. | Rx. | Rx. | Rx. |
| (*a.*) *Bengal sales* | 7,683,558 | 5,463,000 | 7,210,759 | 6,183,398 | 5,978,476 | 6,403,743 |
| (*b.*) *Malwa Pass-duty* | 2,526,236 | 1,645,000 | 2,403,732 | 2,360,464 | 1,758,243 | 2,157,748 |
| (*c.*) *Cost of Excise opium* | 225,046 | 199,000 | 202,545 | 197,108 | 212,001 | 203,980 |
| (*d.*) *Miscellaneous* | 45,211 | 9,200 | 32,611 | 14,978 | 8,079 | 17,552 |
| Total, Opium | 10,480,051 | 7,316,200 | 9,849,647 | 8,755,948 | 7,956,799 | 8,783,023 |
| Credited to Excise:— | | | | | | |
| (*a.*) *License fees* | 213,648 | 241,595 | 234,211 | 252,165 | 262,677 | 250,789 |
| (*b.*) *Profit on opium issued* | 553,191 | 669,589 | 602,070 | 657,498 | 718,680 | 663,512 |
| (*c.*) *Punjab acreage duty* | 3,076 | 3,000 | 3,969 | 3,327 | 3,772 | 3,592 |
| Total, Excise | 769,915 | 914,184 | 839,979 | 912,990 | 985,129 | 917,890 |
| TOTAL REVENUE | 11,249,966 | 8,230,384 | 10,689,626 | 9,668,938 | 8,941,928 | 9,700,916 |
| EXPENDITURE. | | | | | | |
| Under Opium:— | | | | | | |
| (*a.*) *Bengal* | 2,026,411 | 2,250,000 | 2,052,808 | 2,748,393 | 1,896,125 | 2,245,273 |
| (*b.*) *Malwa* | 1,917 | 3,900 | 2,023 | 3,714 | 3,862 | 3,283 |
| Total, Opium | 2,028,408 | 2,253,900 | 2,054,831 | 2,752,107 | 1,899,987 | 2,248,556 |
| Under Excise | 9,505 | 8,180 | 8,467 | 6,512 | 8,003 | 7,603 |
| Refunds | 109 | 100 | 760 | 170 | 63 | 300 |
| Expenditure in England | 106 | 1,100 | 1,227 | 3,064 | 1,057 | 1,822 |
| TOTAL EXPENDITURE | 2,038,128 | 2,263,280 | 2,065,285 | 2,761,853 | 1,909,110 | 2,258,281 |
| NET REVENUE | 9,211,838 | 5,967,104 | 8,624,341 | 6,907,085 | 7,032,818 | 7,442,635 |

152. The net revenue from opium, on an average of the 14 years, as shown in the last column of the above table, is Rx. 7,442,635. During the last five years, however, the average has been only Rx. 7,032,818. For the year 1893–4 this revenue, according to the Budget Estimate, was Rx. 5,967,104, and according to the Revised Estimate presented to Parliament in April, 1894, was considerably less. It was affected, amongst other causes, by a fall in prices following upon the closing of the Indian mints, but later reports show that this fall was of a temporary character, that prices

in Calcutta have again risen, that it has consequently been possible to increase the rate of pass duty on Malwa opium,* and that there is a prospect of a larger revenue for the current financial year.

Importance of the opium revenue.

153. Into the details of Indian finance it is neither our wish nor our duty to enter. The general position is ascertainable from statements presented to Parliament. We must, however, point out that opium is at the present time one of the largest sources of revenue to the Indian Government. The average figures for the last five years are given in the table below. We may further point out that, owing to various causes, notably to the necessity of discharging sterling obligations in a depreciated currency, the resources of the Indian Government are at the present moment strained to the utmost. The difficulty of increasing their revenue from any fresh sources of taxation is at present being illustrated by the efforts of the Indian Government to make up the existing deficit by the re-imposition of the cotton and other import duties. The contraction of expenditure imposed upon the Government by the present state of the public finances prevents them from providing funds for objects admitted on all sides to be important. The general development of the country is thus materially retarded, even with the existing revenue. It is hardly possible, therefore, to exaggerate the difficulties that would result from the curtailment of its resources to the extent involved in the abandonment of the receipts from opium, or to suggest any means by which the gap in its revenue could be filled up.

II. 2058, 2072.

TABLE 14, showing the AVERAGE NET REVENUE under the PRINCIPAL HEADS, for the five years ending 1893–4.

(Compiled from the Finance and Revenue Accounts of the Government of India up to 1892–3, and from the Budget Estimate for 1893–4.)

| Heads of Revenue. | Net Revenue. | Per-centage on total Net Revenue. |
|---|---|---|
| | Rx. | |
| Land | 20,517,972 | 40·87 |
| Salt | 8,028,861 | 16·00 |
| Opium | 7,032,820 | 14·01 |
| Stamps | 4,072,223 | 8·11 |
| Excise | 3,878,122 | 7·73 |
| Provincial rates | 3,502,292 | 6·98 |
| Assessed taxes | 1,603,297 | 3·19 |
| Customs | 1,460,182 | 2·91 |
| Forests | 664,471 | 1·32 |
| Registration | 188,025 | 0·38 |
| Tribute from Native States | 775,180 | 1·54 |
| Total | 51,723,445 | 103·04 |
| *Deduct* assignments and compensation | *1,526,415* | *3·04* |
| Net Revenue | 50,197,030 | 100·00 |

Indirect loss of revenue :— (1.) on account of cost of preventive measures.

154. We have next to consider the indirect results upon the finances of India of the proposed prohibition of the production and sale of opium except for medical purposes. In the third Section of our Report we have given strong reasons for holding that the British Government cannot, with due regard to the obligations which regulate its relations with the Protected Chiefs, extend a measure of prohibition to their territories, or withdraw the right of transit of Malwa opium for export by sea. We assume, therefore, for the purposes of argument, that the measure in question would be introduced into British Provinces only, and that opium would accordingly continue to be produced in Native States. The establishment necessary to form a line between these States and British territory, in order to stop the introduction of opium into the latter, would be numerous and costly, while it would be vain to expect that it would be effective, though, no doubt, the prevention of the transit of opium, in large quantities, through British territory for export by sea would not be beyond the power of the Government of India. Some establishment also would be required especially in Bengal, to restrict the cultivation of the poppy in British territory, and to exercise those powers of search and of apprehension which would be necessary to prevent consumption for other than medical purposes. No approximate estimate of the cost of these measures has been presented to us.

* Gazette of India Notification of the 11th December 1894.

(2.) On account of compensation to interests in British Provinces.

II. 5306, 5567, 6271. III. 11,420.

II. 5305. III. 10,795, 10,843, 10,965, 11,129, 12,175, 12,346, 12,375, 13,693. III. 14,363 14,397, 19,459.

II. 5251, p. 400 (map). III. 11,322, 10,802, 10,815.

III. 13,694, 14,914, 19,535–41, V. p. 98.

*e.g.* Assam. II. p. 454. IV. p. 512, (par. 12).

155. On the same assumption, there would arise the question of compensation payable to landowners and cultivators of the poppy in British Provinces. On this question we have received no direct expression of the views of the Government of India The subject is an intricate one, and the evidence given before us was of a conflicting character. In the first place, the terms of assessment of the Government demand on account of Land Revenue differ in the different Provinces where the poppy is cultivated. In the districts under what is know as the Permanent Settlement, introduced by Lord Cornwallis in 1793, it seems clear that the landowners could have no claim to a reduction of their assessment in the event of poppy cultivation being prohibited. There is no doubt, however, that such a measure would reduce the profits of the large body of tenants who have hitherto been allowed to cultivate the poppy in these districts. The evidence given before us conclusively proves that to the smaller cultivators in particular, and to those who have no good market for garden crops, the advances and the fixed price obtained from Government for the crude opium are a valuable resource. Whether it would be necessary on equitable grounds to compensate these cultivators, is a difficult question upon which we are unwilling to express a decided opinion. We do not think that the landowners could be compelled to grant them reductions of rent. In the other Provinces periodical revisions of the assessment are carried out, and here the question stands on a rather different footing. It was stated before us by several Settlement Officers that, though the assessment is based in theory on the class of soil and existing rentals, not on the particular crop ordinarily grown, yet, practically, both the rentals and the classification of the soil are largely influenced by the crops which have been usually raised in the past. The general view, therefore, was that in estates where the cultivation of the poppy has hitherto been permitted, tenants' rents would have to be reduced, and the landowners would be equitably entitled to claim a reduction of their assessment to Land Revenue. Neither landowners nor tenants would be compensated fully by such reduction. It may be noted that the districts where the poppy is cultivated are the most densely populated in India, and it was confidently stated that the effect of prohibition on the poorer class of cultivators, in particular, would be that they would be reduced to a still lower condition of life. The Settlement Officers of Lucknow and Rai Bareli roughly estimated the reduction of Land Revenue which would be required in those districts, at Rupees 100,000 and Rupees 200,000 respectively. On the other hand, it is certain that poppy cultivation has in the past been prohibited without payment of compensation in several Provinces, and also, from time to time, in different districts of Bengal and the North-west Provinces. It should be added, however, that in the case of the Central Provinces, where poppy cultivation was prohibited in 1878, it has been found, in the course of the revision of assessments now in progress, that the rents for land formerly under that crop had been allowed to remain too high. These rents have therefore had to be reduced, and this has involved a reduction of the Land Revenue demand.

Our general conclusion, therefore, is, that the sudden discontinuance of the cultivation of a crop which occupies so high a place in agricultural economy cannot fail to be productive of very great hardship to the community. We do not consider that the Government could justly issue an order of prohibition in periodically re-settled tracts, where the poppy had previously been grown under State licence, without allowing to the landowners some reduction of the State demand, on the condition that a proportionate reduction should be made in the rent charged by them to their tenants. The extent of such compensation could only be ascertained after a minute inquiry by officers familiar with the local Land Revenue system and administrative arrangements. It would be obviously beyond the province of Your Commissioners to frame an estimate of the amount that would have to be abated from the current demand on the considerations above mentioned.

Indirect loss of revenue on account of compensation to various interests in the Protected States.

156. Assuming, however, that it were possible to interfere in the Protected States, either by the prohibition of production or by the stoppage of transit of Malwa opium for export by sea, a second case for compensation would arise on behalf of the Chiefs, cultivators, and other interests in the Protected States where the poppy is now cultivated or opium is consumed. We have referred to this subject in the third Section of our Report. It was there made clear that in none of the cases where the question is of great importance to the State, either socially or financially, does the Chief show any disposition to regard pecuniary compensation as an equivalent for the curtailment of his privileges. The loss likely to result from the prohibition was estimated before us by the representatives of the States of Rajputana and Central

India at Rx. 2,977,790 and Rx. 1,602,370 respectively, a large proportion being in the form of an annual payment. There are, no doubt, items in these statements which would be considered inadmissible, if the matter came to be regarded in the light of a formal and definite claim. The details would, necessarily, have to be scrutinised and checked by those well acquainted with the administration and general circumstances of those States, after an exhaustive local investigation. So far as the present inquiry is concerned, we find that in the case of these claims the detail of the estimate is too great and the ground to be covered is too wide for us to attempt to reduce the statement of possible loss to figures. We have ample reason, however, for concluding that the amount of the claims that would inevitably find place in any award based on the liberal terms that, in the circumstances, would have to be adopted, could not fail to be a serious additional strain on the financial resources of India.

III. 18,72. Vol. IV., App. IV. and XI.

157. We have not considered it necessary to call upon the Government of India to furnish us with any statement or suggestion as to the means by which the loss of the revenue from opium could be supplied, or the sources from which funds could be provided for additional preventive establishments and for satisfying the large claims for compensation that would have to be accepted. We may quote, however, the following from the evidence of Sir David Barbour, Financial Member of the Governor General's Council on the subject :—

Difficulty of finding means to replace the opium revenue.

"We may fairly take the total *net* revenue from opium at Rx. 6,000,000 yearly at the present time. I have no hesitation in saying that it would be impossible to carry on the administration of India if the revenue was reduced by Rx. 6,000,000. As it is, there is considerable difficulty in making revenue balance expenditure; and for my part I would positively refuse to attempt the task if the revenue were reduced by Rx. 6,000,000. Some revenue could, of course, be raised by additional taxation, but not Rx. 6,000,000. I have no doubt that the people in this country would bear some additional taxation, if the taxation were imposed in consequence of some disaster which we could not have avoided; but the imposition of heavy or perhaps of any considerable amount of taxation on the people of India, in order to make good the loss of revenue caused by interference with the consumption or export of opium, would cause most serious discontent among the people of India. I should be most unwilling to face the consequences of taxation imposed for such a purpose. II. 2058.

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There is one other consideration that has been put forward as regards the loss of revenue, that if the export of opium from India were prohibited, the measure might be spread over a series of years, say, 30, so that the loss of revenue would be gradual and Indian revenue and expenditure would have time to adjust themselves to the altered conditions. Against that proposal I desire to protest in the strongest terms. It would throw on posterity a burden which we are unable and unwilling to take upon ourselves, and there is no good reason to suppose that posterity will be in a better position to bear the burden than we are."

We may quote, also, from the evidence of Mr. R. Steel, representing the Bengal Chamber of Commerce :— II. p. 160.

(5753.) "I have not been concerned in any way in the opium trade to China."

(5755.) "On the financial position the commercial community consider that it is impossible for us to do without the opium revenue; that no substitute can be found for it. They consider that it would be bitterly resented by all classes throughout India if an attempt were made to take away the opium revenue."

(5762.) "I should view any substantial change in the policy of the Government in relation to the opium revenue with great regret. In my opinion, any proposal to do away with the opium revenue would be met by such a tremendous agitation throughout India that no responsible Government would venture to go on with it."

The evidence of the Honourable Mr. Macdonell, President of the Bombay Chamber of Commerce, and member of the Legislative Council of the Governor of Bombay, is as follows :— IV. p. 314.

(27,839.) "My firm is not interested in buying or selling opium; we have nothing to do with it as merchants."

(26,841.) "In the last three years the annual average of the exports (of opium) was Rx. 9,250,000. It is one of the largest trades in the country. It is an extremely important trade, and if at one blow you sweep it away, you must destroy the livelihood of the very large number of people who are engaged in it."

(26,848.) "It would be possible by doubling the salt tax to make up for the loss of revenue which would arise from the prohibition of opium; but that, I take it, would be considered an extremely harsh measure, as affecting the very poorest classes throughout the length and breadth of India."

(26,850.) "There are only two new taxes I have seen suggested—taxes on tobacco and sugar. But there, again, arises a difficulty. You grow these articles all over India, and the cost of preventive measures would be so great that the taxes would be unworkable."

It is clear that the required amount could only be obtained by an addition to the taxation of the country of a nature to reach down to the masses. The evidence as to the disposition of the people in regard to this point is discussed in the next Section of our Report. It may be considered unanimously adverse to the imposition upon India of the cost, either wholly or in any part, of the prohibitive measures which have been proposed.

Suggestions in relief of the financial difficulty.

158. We proceed to consider a suggestion which has been made as a set-off to the financial difficulty. It has been pressed upon us by some witnesses, favourable to prohibition, that the direct loss occasioned to the Indian finances by the discontinuance of the production and sale of opium would in all probability have a very beneficial effect on raising the gold value of silver, by stopping the drain of that metal from China to India, in payment for the opium sent from the latter country. This argument will be taken for what it is worth by experts in problems of currency and finance. We can only point out that it finds no support in the evidence given before us by Sir David Barbour, as representing the Government of India, and by the representatives of the chief mercantile bodies of Calcutta and Bombay. Mr. Macdonell stated that the opium crop constitutes about one-tenth of the entire exports from India, and Sir David Barbour, speaking of the effect of the stoppage of the opium exports upon the balance of trade and the question of exchange, expressed the following views:—

II. 2572–8.

II. 2073–6, 5760. 5782–4. IV. 26,867–9, 26,856.

II. 2070.

"Apart from the question of losing revenue which at present I can see no means of replacing, the destruction, or serious reduction, of one of the most valuable articles of our export trade would have consequences on the rate of exchange which might prove disastrous at a time when we are attempting to introduce a gold standard into India. The success of that measure depends very largely upon the proportion which is maintained between Indian exports and imports, and anything which would materially reduce our exports would have injurious consequences, and might produce evils which would prove irreparable * * * * * * * I have served for thirty years in India; I have been connected with the Finance Department for more than twenty-one years; I was a member of the Royal Commission on Gold and Silver which sat in England for two years, and I have made a special study of the Exchange question; and I wish to give this Commission the most solemn warning as to the probable consequences of destroying the Indian opium revenue * * * * * * My connexion with India and with the Government of India will come to a close before another week has passed, and I desire to place this deliberate opinion on record as the outcome of experience which, I think I may fairly say, is of its kind not surpassed by that of any other living Indian official."

159. There is an alternative method of supplying the Government of India with the requisite funds on which we think it desirable to record some observations, although the subject does not fall within the Order of Reference. It has been suggested by the Society for the Suppression of the Opium Trade, and the suggestion was referred to on several occasions in evidence before us, that the Exchequer of the United Kingdom might come to the aid of the Government of India in meeting the loss of revenue which would arise out of the prohibition of the production and sale of opium for other than medical purposes. We have no official statement on the part of the Society of the extent to which, in its opinion, the Home Treasury should contribute towards the cost of carrying out that measure. As to the disposition of the British Government towards such a proposal we have only the evidence of the reply given to the deputation from the Anti-Opium Society in November, 1892, by Lord Kimberley, then Secretary of State for India:—

I. p. 163–4. II. 2116, 2467, 2561–9, 2733, III. 12,548–50, 13,957 14,760–67, 18,308.

"I am bound to say that I have not the slightest reason to suppose that there will be any disposition on the part of the Treasury to place a heavy burden upon the taxpayers of this country, for the purpose indicated. I do not think there is any warrant for this. I am speaking as the Minister responsible for India, now, and I do not think that such a proposition to the Treasury, no matter what the Government in power, would be likely to meet with a favourable response."

## SECTION VI.

### The Question of Prohibition.

160. The Order of Reference shows that the main question we have to answer, to which all the rest are subservient or subsidiary, is that of prohibition. This may, we think, be formulated as follows:—

The question formulated.

(I.) What is the weight of the moral objections urged against the system by which the Indian opium revenue is at present raised; and are those objections so strong as to make it advisable, having due regard to political, financial, and administrative obstacles, to prohibit the cultivation of the poppy and the manufacture and sale of opium in British India, except for medical purposes?

(II.) If prohibition were adopted in British India, could it be extended to the Protected States?

(III.) If prohibition could not be extended, then, on what terms, if any, could the existing arrangements with certain States for the transit through British territory of Malwa opium be with justice terminated?

Of these three questions, the second and third, which are subsidiary to the first, have been already dealt with in our third Section, because the answer to them depends directly upon the history of the Malwa opium system, and the relations of the Protected States to the Government of India which are there described. It will be useful, however, to give here a brief summary of the conclusions at which we have arrived.

### A.—Prohibition in the case of the Protected States.

No grounds for authoritative prohibition.

161. As to the extension to the Protected States of the prohibition of the growth of poppy and manufacture and sale of opium except for medical purposes, we found it proved that the Rulers of those States are not prepared, of their own free will, to follow the example of the Government of India in such a policy. To attempt to impose prohibition authoritatively would be a breach of the well-understood limitations of the right of the Paramount Power to interfere in matters of internal administration. We find no precedent which makes the opium question an exception to the general rule. It is true that the Government of India has from time to time used its influence and its opportunities to induce certain States to prohibit production of opium, and the transit of Malwa opium through their territories and to make other internal arrangements in support of the system of opium excise prevailing in adjacent British districts. They, however, are States in which opium has never been produced in considerable quantities, and the special arrangements rest upon Treaties or Agreements whereby a supply of opium from outside is secured for the internal consumption of the States, and for the realisation by the Chiefs of an excise revenue from their subjects. If that supply were to be cut off or restricted, the Chiefs would cease to be bound by these Agreements, and many of them have taken care to have it asserted before us that such is their view of the position.

162. Nor did we find anything which could justify the British Government in making a new departure or creating a new precedent towards the Protected States in connexion with the policy of prohibition. We are satisfied that the opium habit, even in the States where it is most prevalent and where there is no restriction, cannot be said to be causing extensive moral or physical degradation. In the States where the consumption is large, the habit is of long standing, and is often connected with old social or religious observances; but even in these States the tendency of the present day is not towards increase. The imitation of European manners, and the diminishing force of religious commandments and tribal customs, due to English education, tend to make alcohol more popular as a stimulant with those who set the fashion to the rising generation.

Enforcement of prohibition impracticable.

163. Even if authoritative prohibition had been shown to be desirable, the difficulties in the way of enforcement are, we believe, insurmountable. There is no class in these States in favour of prohibition whose goodwill would support the Government of India in such a stretch of its authority. On the contrary, the measure would be resented by Chiefs and subjects alike, even in the States where the opium habit is not common or where the drug is not extensively produced. In such circumstances it is highly improbable that prohibition, if imposed, would be effectually enforced, even though establishments were maintained by the Government of India for inspection and for detection of breaches of the law. The Government of India would be obliged to

compel the Ruler of the State, not only to enact laws to punish the cultivation of the poppy and sale of opium, but also to make his courts enforce such laws. For these reasons we came to the conclusion that the policy of prohibition in the Protected States is impracticable.

Stoppage of transit of Malwa opium for export by sea not justifiable.

164. As to the further question, on what terms, if any, the existing arrangements with certain States for the transit of Malwa opium through British territory for export by sea could, with justice, be terminated, our conclusions were as follows: We found that the trade was of old standing, long antecedent to British rule in India, and that its stoppage would impose serious loss and trouble on the Rulers of the States and upon great numbers of their landowners, cultivators, bankers, and merchants. We held, therefore, that the right of transit could not now be withdrawn with justice, except by voluntary agreement with the States, which, if obtained at all, would involve payment by the Government of India of large pecuniary compensation to the Chiefs and their subjects, in addition to the direct loss of about Rx. 2,000,000 of revenue from transit duty.

Would lead to extensive smuggling into British territory.

165. There is a further consideration to which much weight must be attached, namely, that if the transit of Malwa opium to the sea for export were stopped, without the enforcement in the States concerned of the prohibition of production and internal consumption, it would be a matter of the greatest difficulty, if not of impossibility, to prevent extensive smuggling into British territory. Even at present, with the legitimate outlets afforded by the sea trade and by the demand to meet the consumption of a large part of British India and of many Protected States, there is considerable smuggling of Malwa opium into British Provinces. With all legitimate outlets closed this smuggling would, no doubt, greatly increase, and the present co-operation on the part of the Native Rulers could no longer be relied on. The Government of India might possibly succeed in stopping the exit of opium in chests or packages suitable for shipping, but it would be impracticable to prevent a vast number of small parcels from entering British districts from every side, except by the permanent employment, for a long period, of an enormous protective establishment.

Examination of moral objections to the export trade in Malwa opium.

166. The moral objections which have been raised to the export of the Malwa opium, rest upon the assertion that the habit of smoking opium which prevails in China and other parts of the Far East, causes extensive moral and physical degradation. We have reviewed the evidence on this point in the fourth section of our Report, and have agreed that the effects of the use and abuse of opium in China are fairly comparable with those of intoxicating liquors in England. Such effects do not, in our opinion, constitute an objection to the Malwa export trade which makes it morally incumbent upon the rulers of the Protected States to put a stop to what is a private industry. The attitude of the Government of India towards the trade is purely restrictive. It imposes as high a transit duty as the trade can bear. It must be remembered, that in the similar case of the export of alcoholic liquors from England by manufacturers and merchants, no check is exercised, and no duty is imposed.

### B.—Prohibition in the case of British Provinces.

The moral objections to the export trade in Bengal opium.

I. 5, 106.

II. 2771, 2461.

167. We now come to the question of prohibition in British Provinces. We think it can be most conveniently treated by dealing first with the export trade in Bengal opium, and afterwards with the consumption of opium in India. The moral objections to the present system, so far as the export trade in Bengal opium is in question, are, first, the effects in China, which we have considered in the preceding paragraph, and, secondly, the fact that the Bengal opium exported to China and elsewhere, is manufactured and sold to the exporting merchants by officers of the Government of India. It is not considered right that the Government should have any connexion with the export of a drug which is believed to have evil results, or that India should derive revenue from what is said to be injurious to China.

Examination of these objections.

168. It is evident that the position of the Government of India in relation to the trade in Bengal opium is to some extent invidious. But so long as the importation of Indian opium is allowed by the Chinese Government, and is not imposed upon it by intimidation or pressure of any kind, we are not of opinion that the objection based upon the effects of the opium habit in China, or upon the peculiar relations of the Government of India with the trade, are, from a moral standpoint, sufficiently strong to call for interference on the part of the British Government. If the Government of India maintains a restrictive attitude to the export of Indian opium by taxing the Malwa drug, and by limiting the amount of Bengal opium put on the market, and so keeping the price high, we think its position is defensible, and that with

reference to its duties to the people of India it cannot be justly required to go further and to extinguish the trade. In regard to the admission of Indian opium, China is now, at all events, a perfectly free agent. The Convention of 1885, by which the trade is now regulated, is based on principles specifically proposed by the Chinese Minister who conducted the negotiations, as being those most favoured by the Court of Peking. It contains all the provisions which the Chinese Government had pressed upon that of Great Britain, and, in the words of the Marquis Tseng,* those provisions "find their strongest guarantee in the moral "obligation imposed upon his Government by the consideration that the arrangement "was of that Government's own proposing." Lord Kimberley, then Secretary of State for India, in announcing to the Government of India his acquiescence in the terms proposed by the Chinese, gave one of his reasons for so doing in the following words:—

Marquis Tseng's Mem., No. 29, of 12th March 1883. Do., do. Mem. of 30th Sept. 1884. China, 5, of 1885 (C. 4448).

VII. p. 215.

"6. Finally, the Anti-Opium agitation in this country, already serious, and likely to be yet more formidable in a new House of Commons, is a factor in the present question to be taken into grave consideration. For some time past, the leaders of that movement in Parliament have been chiefly insisting upon the injustice of preventing China from doing what she desires as regards the taxation of Indian opium. If the present Chinese proposals are accepted, the answer to this argument will be obvious and conclusive. You will observe that the Chinese Minister's Memoranda of March 12th, 1883, and of September 27th last,* admit unreservedly that the Agreement now under negotiation is of the Chinese Government's own proposing and includes all that they desire."—*Desp. No.* 7 *of* 22*nd January* 1885.

It may be added that there is no evidence from China of any popular desire that the import of Indian opium should be stopped.

Financial and political objections to withdrawal from the export trade.

169. But even if the objections to the trade with China were stronger than they are, there are many and great obstacles to the abandonment by the Government of India of their present position. We have shown, in the fifth Section of our Report, that the financial results to India of the withdrawal from the production and sale for export of Bengal opium would be disastrous. Amongst the people of India there is no party in favour of the surrender of the profits of the opium monopoly for the sake of a problematical benefit to China. The stoppage of the cultivation of the poppy, which now supplies the export trade, would be highly unpopular amongst the large number of industrious and skilful cultivators who have for generations looked upon the crop as affording them the means of employing a small portion of their holding to the best advantage, and enabling them to make a decent livelihood without the necessity of placing themselves in the clutches of a usurious money lender.

10,797, 10,873, 10,949, 11,002, 11,117, 11,329, 11,415, 12,518, 12,893, 19,781-5.

Withdrawal would have no practical effect on consumption in China.

170. There is another practical and weighty consideration which has been placed prominently before us by a unanimity of testimony which it is impossible to disregard. So far as the main object of the prohibition is concerned, all our evidence is to the effect that the withdrawal of the Bengal supply of opium would have no lasting result whatever. The whole quantity of this opium is only a small part of the total consumed in China. Its use is confined to certain classes and to a few special localities, and is unknown to the majority of the consumers. We have already given our reasons for holding that interference is uncalled for and impracticable in the case of the Protected States of India, and the whole China demand for the Indian article could be met by Malwa, without an ounce of Bengal opium leaving the country. Failing Malwa, Persia and Asia Minor are prepared to fill the gap left in a market in which they have long had a considerable foothold. The main competitor, however, is the home-grown produce of China itself. According to the evidence we have received from China, the withdrawal of Indian competition would only result in an increased stimulus to the cultivation of the poppy, the improvement of the manufacture, and the attempt by the Government to put heavier taxation on the native drug in order to make up for the loss of import duty and *li-kin* on the Indian article. For all these reasons we consider that no case is made out for prohibiting the export trade in Bengal opium.

Decennial Consular Reports, 1892, pp. 49, 176, 300, 449, 642, &c.

Statistics of Government of India, 1894, p. 61. Decennial Consular Rep., pp. 12, 34, 50, 88, 137, 669 V. pp. 238, 243, 257, 265, 266, 268, 284, 287, 296, 301, 307, 313, 341, 232, 273, 283, 284.

Consideration of two special arguments for withdrawal.

171. There are two arguments which have often been used in favour of prohibition of the export of Indian opium to which we have not referred, but which must, we think, be noticed. The first is, that the stoppage of the export of Indian opium to China would set free large sums of Chinese money, which sums would probably be appropriated in part to the purchase of English manufactures. This argument was prominently used in the House of Commons on the 10th April 1891, and again on the 30th June 1893. Mr. David McLaren, the President of the Edinburgh Chamber of Commerce, addressed his evidence before us mainly to the same point, and admitted

Hansard, 352, p. 269, Debates XIV., p. 599.

I. 1791, 1849, 1856.

* This is quoted as the Memo. of the *30th* September in the Parliamentary Return C.—4448.

that he expected that the commercial gain would be to England and the loss to India. We fail to see that any increase in purchase by China of English manufactures would actually result from the measure. As we have just said, we have evidence of a unanimous kind from China, which seems to us to prove that the money would simply go to buy more Chinese and more Persian, Turkish, or other non-Indian foreign opium. We think it right, however, to remark that, if prohibition of export of opium to China was imposed on India with any reference to this argument, it would be only just that England should make good the loss of revenue. As, moreover, this argument has been put forward prominently, it seems certain that, if prohibition were to be imposed by England, it would be difficult to disabuse the people of India of the belief that this consideration was the main ground of the measure.

I. 217, 335, 393. I. p. 164-5. Hansard, 68. Hansard, 391. Hansard, 325. Hansard, 1160-62. Debates, XIV., p. 613.

172. The second argument is, that the opium habit and the connexion of the British Government with the opium trade are impediments to the conversion to Christianity of the Natives of China. We are not agreed in thinking this assertion proved. The evidence before us from China on the point is conflicting, though the majority of the missionaries support the statement. In any case, it is not an argument with which we can expect the Natives of India to sympathise, or to which they would admit the right of the British Government to attach weight, unless England were prepared to bear the cost.

Moral objections to present system of opium administration in British India.

Sect. VIII.

173. We have finally to estimate the weight of the moral objections to the present system so far as it relates to the use of opium by the population of British India, and to consider the obstacles to the proposal to prohibit the production and consumption of opium in British India except for medical purposes. We exclude from the scope of this inquiry the province of Burma, where the conditions of the question are so different from those in the rest of the country that we have decided to discuss them in a separate Section. The moral objections to the system with which we have here to deal are the same as those which we have already had occasion to mention in connexion with the export trade, namely, the alleged deleterious effects of the opium habit on the consumer, leading to his moral and physical degradation, and the position of the Government as manufacturer of the Bengal drug and supplier of the retail vendors. We have stated our conclusions as to the weight of the first objection in our second Section, and the subject has been fully discussed from a medical point of view by our colleague, Sir William Roberts in his Memorandum. Those conclusions, put briefly, are, that while almost everywhere in India, opium is the common domestic medicine of the people, the habit of using it as a stimulant for non-medical or quasi-medical purposes, as alcohol is used in Europe, also prevails extensively in many places, and among some of the leading races of India. As regards the use as a stimulant, we found that the common practice of taking the drug in pills or infusions is of old standing, and is generally followed in moderation and without injurious consequences, moral or physical. There are, no doubt, cases of excess, as with all stimulants, but they are not frequent, and the effects in such cases are not so bad physically or morally, as those of excess in alcohol are in India. As to the quasi-medical habit, the evidence of the medical witnesses led us to the conclusion, that in the circumstances of India in respect to climate, diet, mode of living, and medical aid, this use is probably, on the whole, beneficial. We did not find it proved that the use of opium promotes, crime, suicide, insanity, or abnormal infant mortality.

I. 144. II. 2987.

174. The second objection refers to the position of the Government of India as manufacturer and supplier of Bengal opium for consumption in India. On this point we must begin by remarking that it is now generally admitted that the limitation of cultivation and the monopoly of manufacture and wholesale supply, which the Government of India enforces through the Bengal Opium Department, practically constitute the most restrictive position, short of prohibition, which the Government can adopt towards internal consumption. In the second place, it must be observed that while in the greater part of the Bengal Presidency the Government manufactures the opium locally consumed, this is not the case in the other parts of British India. In the Punjab, Belochistan, Ajmer, Coorg, and the Bombay and Madras Presidencies, the Government has nothing to do with the growth or manufacture of the drug, and only taxes and regulates the consumption as it does in the case of alcohol. As to the regulation of consumption in British India, we have given a general description of the rules and the statistics of the number of shops allowed, and of the consumption, in the second Section of our Report. Having come to the conclusion that the use of opium cannot be regarded in India as less legitimate than that of alcohol, we consider, that from this point of view, the excise regulations, at present in force in respect to opium, are highly restrictive.

175. In the two preceding paragraphs we have given our reasons for the conclusion, that the moral objections which can be urged against the present system are not of such weight as to require the prohibition of production and sale except for medical use. We need not, therefore, discuss at great length the obstacles which would stand in the way of enforcing such a policy in British India. If we are right in concluding that it would be impossible to extend prohibition to the Protected States, it is evident that the difficulty of preventing extensive smuggling into British territory would be immense. As regards the financial difficulty, we may point out that the direct loss due to the attempt to limit the consumption in British districts to that required for medical use cannot be estimated, as it would depend upon many circumstances, but it would no doubt be considerable; and the cost of large preventive establishments to keep out smuggled opium would have to be added.

Financial and administrative obstacles to policy of prohibition in British India.

176. A serious obstacle in the way of prohibition is the practical difficulty of carrying out that policy. It is obviously out of the question for a Government to accept a scheme which it would be impossible to enforce. This, however, is the case with the measure we are now considering. The suggestion, it should be borne in mind, is, that production should be limited to the quantity necessary for medical use in India. As to the dispensing of the drug, we may take as an authoritative exposition of the view of those who make the suggestion, the memorial of the Anti-Opium Society to Lord Kimberley in November 1892, in which it is demanded—

Enforcement of prohibition impracticable.

I. p. 163.

"That discretionary powers for its sale should be entrusted to responsible and carefully selected persons who possess adequate knowledge of the deleterious properties of the drug, and who can be readily called to account for the improper use of the discretion conferred upon them, and whose remuneration in no degree depends upon the amount of their sales."

The first observation we have to make in connexion with the scheme is, that one of the facts most clearly brought out in the evidence as regards the opium habit in India is, that no distinct line is drawn in popular opinion between the medical uses of the drug and those which cannot be strictly so called. In point of fact the two uses are so interwoven that even professional men of the same school of medicine would frequently disagree in attempting to discriminate between them, whilst between practitioners of different schools disagreement would constantly occur. The persons to whose discretion it is proposed to leave the decision must possess two main qualifications, first, adequate medical training, and secondly, integrity, so as to ensure that the discretion vested in them should be properly exercised. They would also have to be numerous, in order to supply the drug at once in case of sudden necessity, and to allow of doubtful applications being tested by personal inquiry. As to the classes in India from which an agency having the required qualifications could be recruited, the views of those who advocated the scheme were as divided as upon the question of what might and what might not be correctly termed medical purposes. The principle was formulated, indeed, but the means of applying it in practice were left undetermined.

*e.g.* 2514-5, 4341-8625, 9057, 10,570-9, 12,667, 13,035, 13,148-9, 15,535-6, 18,034, 19,066, 20,111, 20,150, 27,845.

177. It was suggested by some witnesses that opium should only be obtainable on the prescription of medical practitioners, qualified under the European system. This is to go beyond the existing practice in the United Kingdom and beyond the proposals of the Anti-Opium Society, and would be impracticable in the present conditions of India. It must be borne in mind that the population of the British Provinces is over 220 millions. The number of hospitals and dispensaries under European supervision in those provinces in 1893 was only 1,800, with an average daily attendance of patients numbering 94,000. European non-official practitioners are only found in the Presidency and Provincial capitals. The supply of Native medical men, trained under the European system, though much increased of late years, is still confined to the larger towns, or to the district head-quarters. The head of the Indian Medical Department told us that not one in five of the population ever sees a practitioner on that system during their whole lives. Another witness, who had enjoyed good opportunities of forming an opinion on this point, stated that three-fourths of the deaths occur without the invocation of any professional advice of any sort. In most households, domestic or traditional treatment is the rule, in consultation generally with relatives of the invalid. If professional medical aid be sought at all, the people who can afford it commonly resort to practitioners on the Vedic or Yunáni methods, who still command the confidence of great masses of their countrymen, and who are in the habit of freely recommending the use of opium. Failing these, recourse is had to exorcists, herbalists, and others, who have not the slightest claim to the possession of a knowledge of medicine. Some of the Vedic and Yunáni practitioners are hereditary physicians,

Want of medical agency.

*e.g.* 2674, 3060, 5848, 5918, 9251, 15,199, 18,927, 27,845.

Home Department statistics, 1894.

II. 2147.

II. 3535.

*e.g.* 442-6, 4472, 4519, 5849, 10,575-80, 13,143, 14,540, 20,156, 13,153, 13,225, 14,670, 15,202, 17,968.

and have studied the system they practise, but all are self-appointed, and have undergone no test of qualification. The majority, as most of the advocates of prohibition admit, are not qualified by knowledge for the exercise of the discretion with which they would have to be invested, nor are they deemed sufficiently beyond reach of temptation to be entrusted with this responsibility. The same objections would apply to the lower class of Native practitioners trained on the European system even if this agency could be sufficiently multiplied.

Want of druggists.

*e.g.* 14,072, 17,961, 15,637, 15,638, 13,129, 14,544.

14,685, 18,927.

178. The suggestion that this duty should be entrusted, as in England, to licensed and qualified druggists, has also to be considered. On this we must observe that we have ample evidence that druggists, in the sense of chemists, are practically unknown except in the very largest cities and the cantonments of British troops. Regular druggists of the Native school are numerous enough in some large towns, but are rarely to be found in small towns and never in villages. The remarks we have made above as to the qualifications of the uncertificated practitioner apply with still greater force to the class of persons who, under the name of druggists, would be invested with a discriminating and discretionary power in dispensing opium. It was generally agreed that, looking to the wide use of opium as a stimulant in India, there would be no security that the drug could be restricted to medical purposes, whilst it would be certain that unscrupulous men would take advantage of the abundant opportunities that would be offered for enriching themselves at the expense of the community at large.

Regulation of sale of poisons.

179. It is relevant to this part of our subject to point out that the regulation of the sale of poisons long ago engaged the attention of the Government of India. In some of the Municipal Acts, indeed, provisions for this purpose have been included, and in a municipal town such sales can be efficiently supervised. Bombay, however, is the only province in which an Act of general application is in force. In 1866, when this local enactment came into operation, the opinion of other Governments and Administrations was not favourable to such a measure. In 1881, when the question of the use of certain poisons for criminal purposes came under consideration, Lord Ripon's Government held that the 15 years' experience in Bombay showed that regulation could only be effectual if made very stringent and far-reaching. No general enactment on the subject has, therefore, been passed. In the case of the poisonous substances specified in Part I. of Schedule A. of the English Pharmacy Act of 1868, it is very doubtful if the Act has been effective as regards opium in parts of the country where laudanum is in demand for other than medical uses. Still less would it be practicable to apply the provisions of an Act of this character to the sale of an article in such general use as the evidence before us proves opium to be in India.

*e.g.* 15,152, 15,543.

I. 7, 116-8. II. 2491-2, 3387. IV. 24,702-6.

Disposition of the people towards prohibition.

180. The chief obstacle, however, to the enforcement of prohibition, is to be found in the disposition of the people of India, a matter on which we are specially required to report by the Order of Reference. From the evidence we have taken we are convinced that the great mass of Native opinion in British India is entirely opposed to the proposal, as an unnecessary restriction on individual liberty, and an interference with established Native habits and customs. We believe that even those who are not addicted to the opium habit, and who do not belong to the races which commonly use opium as a stimulant, regard the proposal with dislike and suspicion from this point of view. The use of alcohol is admitted by all Mahomedans and, with few exceptions, by all Hindus, to be directly prohibited by their religion. On the other hand, the use of opium is generally considered to be permissible by Hindus, and by all but a few Mahomedans in India. Many able and leading members of the Native community, Hindu and Mahomedan, not themselves addicted to the opium habit, expressed in their evidence an apprehension that prohibition of the non-medical use of opium would result in an extension of the consumption of alcohol. We cannot say that we think this apprehension unfounded, and it is clearly established by the evidence that, apart from the religious question, the Natives of India generally consider the use of alcohol to be more open to objection in itself, more likely to prove injurious physically and morally, and more disgraceful, when carried to excess, than the opium habit. As to the Rajputs and Sikhs, two of the most martial races in India, with whom the use of opium is more or less of a race custom, they would strongly resent the proposed measures. In India, alcohol is regarded as the national stimulant of Englishmen, and its use as permitted by the Christian religion. Exaggerated views prevail among Natives of India as to the extent to which the English use alcohol. It is natural, therefore, that Rajputs and Sikhs and other Indian races should question our right to prevent their using opium as a stimulant according to their customs, and

*e.g.* 8467, 8459, 8489, 8779, 16,225, 16,076, 19,044, 19,092, 13,230, 13,865, 14,770, 16,711, 17,658, 18,973, 17,516. 3185, 6104, 6225, 6378, 10,032, 13,237, 16,712, 18,117, 24,371. 18,325, 22,737, 24,057, 22,737, 22,787, 22,863, 23,516, 23,767, 24,015. 17,659.

the feeling of resentment would be intensified among the Sikhs by the fact that they are debarred by their religion from the use of tobacco. We are confident that it would be politically unwise to enforce a measure which would have the effect of bringing into strong contrast the position of the Englishman, with regard to alcohol and tobacco, and that of the Sikh, cut off, as he would be, by a law of alien origin from a customary stimulant, unquestionably permitted by his religion.

181. There is no doubt a considerable minority among the people of India who disapprove in theory, and probably in practice, of all stimulants, including opium. The Indians generally are inclined to be thrifty and abstemious in matters of diet as compared with Europeans; by their religions, also, they are specially disposed to regard asceticism as a virtue, and to think that a man is morally defiled by what he eats and drinks. But the more responsible and representative witnesses of this class who came before us, while condemning the habit in a more or less decided way, did not give evidence in favour of the policy of prohibition except for medical purposes. We apprehend that they were deterred by anxiety as to the inquisitorial and punitive measures which repression would involve, and as to the financial results of that policy. We gather that, though they would approve on moral grounds of the supply being cut off if possible, yet the policy of repression by making indulgence in opium an offence punishable by the magistrate would not have their sympathy. Almost the only Native witnesses who went further than this belonged either to the Brahmo Somaj, a Bengali sect of about 3,000 adherents who are generally pledged to total abstinence, or to certain total abstinence associations which have been established to fight against intemperance in alcohol. A few Native Christians and a few other men who have received a European education may be added to the number. Almost all of these witnesses, however, qualified their acceptance of the policy of prohibition by stipulating that the cost should be met either by a subvention from the English Treasury or out of the existing revenue. We believe that the number of Natives of India who are willing to bear even in part the cost of prohibition, or who would support the proposal on that understanding, is exceedingly small.

esp. 6376, 5903.
18,142, 18,238, 24,597, 26,805, 27,316.
17,974, 20,069.
8972, 14,675, 15,608, 15,654, 11,705, 18,189, 9831, 9442-6, 9449, 9504, 23,455, 23,359, 15,582, 20,041, 2824-30, 20,119, 14,760 7, 18,308.

182. It is a most significant fact that no organised body of the Natives of India, except some of those leagued together wholly or chiefly for the purpose of advocating total abstinence from stimulants, has declared itself in favour of the measure we are now discussing. The political associations springing up all over India, have refrained from committing themselves to the approval of such a policy. The influential body representing the upper classes in Bengal, known as the British Indian Association, opposed prohibition by memorial to the Government of Bengal, and some of its leading members appeared before us in support of that view. We must specially note the reticence of the Indian National Congress, a body which claims to represent the people of British India. This association has come to a definite conclusion on the subject of alcohol, but has never found it necessary to discuss that of opium. It is well known that friends of the Congress in England suggested that the opium question should be included in its programme, but this has not been done. This attitude of a body which has never shown itself backward in criticising the Government, or in adopting the suggestions of European reformers, affords conclusive proof that at all events the Congress considers opium a lesser evil than alcohol, and is not prepared to recommend a policy of prohibition. On this point we quote in full the answers of Mr. Jaishi-Ram, one of the chief representatives of the Congress in the Panjab. We believe he expresses the views which are held on the question by the great majority of the educated men not themselves addicted to the habit.

Attitude of Indian political associations.

II. p. 313.

III. 14,789.

See "Abkari." Oct. 1893.

III. 13,260 14,783-9, 15,788-9, 16,724, 18,692.

| *Question.* | *Answer.* |
|---|---|
| (18,614.) Looking at the subject with the eye of a moral reformer, what do you say as to the possibility of dealing with any of the evil results of the use of opium by legislative interference? | I do not think there should be any legislative interference whatever. |
| (18,615.) Will you justify that? | My grounds are; in the first instance, people do not want it at all. Up to the present time there has been no representation on the part of the people that there should be any legislative interference; and, of course, if there be any legislative interference, it would be quite uncalled for. My second ground is, that it is not necessary; it is not called for at all; and it is interfering with the domestic lives of the people. It will certainly create disaffection. My third ground is, that, if there be any legislative interference, it will simply remain as a dead letter, because it must be allowed as medicine under any circumstances. |

*Question.*

(18,616.) Develop your views as to the practicability of that limitation?

(18,617.) You say if there has been no restriction on much more injurious things, why should there be legislative interference with regard to a less harmful thing?

(18,618.) We have had many witnesses before us who have practically recommend that there should be prohibition of the use of all stimulants excepting under medical advice: do you believe in the possibility of a policy of prohibition of all stimulants except for medical use?

(18,619.) You prefer to rely upon the cultivation of a wholesome popular sentiment upon this question, rather than recommend a restrictive policy by the Government, involving vexatious and harassing action by the police, and other consequences which you think would be disgraceful to the people: is that your view?

(18,620.) Have you any other ground?

*Answer.*

I think that the idea up to the present time is that it may be allowed as a medicine but disallowed otherwise. I do not think it will be practicable for the Government to look after the people when they are using it as medicine and when not: so that if there be any prohibitive legislation in any way it will remain simply a dead letter. My fourth ground is that there are a good many other things, such as *ganja* and *charas;* there has been no interference in those matters, and why should there be any in the case of opium?

That is my opinion. My fifth ground is this: if you remove opium, more or less, it will be superseded by liquors or other things which are really much more harmful with special reference to the climate of this country.

I think that none should be prohibited by the Government. These matters should be left entirely for the people themselves.

Yes.

My sixth ground is this: there are thousands of people who are now engaged in this cultivation and trade. If there be any prohibition or any legislative interference, the result will be that those people will in sudden be left entirely without occupation. They will raise an outcry certainly; and of course there will be some consequences which might turn out seriously. My next ground is, that it is a new departure altogether. There are a great many practices which exist in this country which are called vices, and they exist in other countries too, but with which no Government has interfered at all. It is an old established policy, and I do not see that there is any reason why there should be a departure in the case of opium.

III. 12,502-59. As an example of the opinions of a man holding a higher rank and more important position in the Congress movement, we quote the following from the evidence of the Honourable Raja Rampal Singh:—

*Question.*

(12,526.) I suppose there is a temperance party in India who would like to do away with all alcohol, opium, hemp, and everything?

(12,527) Some of them?

(12,528.) There are some, but they are few?

*Answer.*

Alcohol of course; I never heard of opium and other things. But since the European abstainers have joined them, they are becoming converted to this faith.

Yes. Formerly I did not hear of it, but now I find some. The movement has entered a different phase.

They are very few.

Evidence of Europeans in India on the subject of prohibition.

183. On the subject of the disposition of the people of India the Indians themselves are the best witnesses. We think it right, however, to notice the opinions expressed by European witnesses in India on the question of the desirability and feasibility of prohibition except for medical purposes, and as to the way in which such a measure would be accepted by the masses of the Indian people. The only class which appeared in any considerable number before us to advocate the measure, and to declare that it could be enforced without causing discontent or political danger was that of the European and American missionaries. But though their number is far greater than that of witnesses of any other class presented on behalf of the Anti-Opium Society, we are bound to observe that these witnesses represent but very partially the general body of missionaries in India. They belong chiefly to American or Canadian denominations of the Methodist, Presbyterian, or Baptist churches, which contain little more than 7 per cent. of the total number of Protestant converts, and which are believed to make total abstinence a rule of church discipline. Their views are not shared by the members of other denominations who gave evidence before us, and are specifically disclaimed by missionaries and clergy of the Church of England which comprises between 50 and 60 per cent. of the Protestant community. The marked abstention from advocacy of the

2273, 2653, 2782, 11,018, 11,070-80; 11,983-5, 21,401, 21,490, 23,310, 23,353, 23,457.

Missionary statistics, 1890.

III. 12,809-12. II. 168. V. 138. IV. 25,563.

17,157, 17,253, 16,925, 16,909, 5470, 8690, 8767.

measure on the part of the Roman Catholic and Syrian Churches, the oldest and largest in the country, which contain over 70 per cent. of the Christians of India, has also to be taken into consideration.

184. Irrespective, however, of the comparatively small extent to which the missionary witnesses in favour of prohibition represent their fellow labourers, we have had occasion to note the inadequate experience on which the opinion of some of these witnesses is based. We fully recognise the sincerity of their purpose, and there are no doubt, amongst them men who have given sufficient time and study to the subject to entitle their opinion to respect, but in many cases the witnesses had only short experience in India, and it would seem that their attention had not been directed to the effects of opium until a recent period and in connexion with the movement against its use in India. Dr. McKee stated plainly what many of the witnesses of the class to which he refers confirmed in their testimony before us, namely, that until special attention had been called to the matter, it had not forced itself upon the notice of missionary workers. II. 4325–9. 17,252, 8669. III. 11,584–86, 11,618, 14,961–96, 14,760, 11,093. IV. 21,880, 21,105, 21,395, 21,506–7, 23,540, 23,543–7, 23,789, 26,080, 26,199, 26,451, 26,494, 26,498, 26,944, 27,093, 27,178, 204, 27,645, 650, 28,197, 28,169.

185. In considering the European opinion which has been expressed on the question of prohibition, we have to take into account the views of important classes, such as the leading mercantile bodies in India, the Chambers of Commerce of Bengal, Upper India, and Bombay, and the community of planters, who are necessarily in close contact with large classes of the Native community. These are emphatically adverse to the proposed restrictive measure. A number of Government officials, with long and varied experience of the country, also gave evidence to the same effect. Some of these occupy posts of the highest responsibility under the Crown, and cannot therefore be held to speak without due knowledge and deliberation. We quote, for example, from the testimony of Sir Charles Crosthwaite, Lieutenant-Governor of the North-West Provinces and Oudh :— II. p. 439–525. 10,038, 10,099, 10,145, 10,208, 11,117, 12,348, 12,766, 5,787. V. p. 136. II. p. 439, 525. IV. 26,859. II. 3,191, 4,989. III. 10,785, 10,847, 17,233, 19,099.

| *Question.* | *Answer.* | |
|---|---|---|
| 14,888. * * * May I ask in what way an expression of popular opinion would be likely to occur in this country? | I understand the President to mean an expression against opium; that if there had been a strong feeling against the use of opium there would have been a popular expression of that feeling. I think it would have come to light much in the same way as the agitation against cow-killing and so on comes to light. There would have been movements of the people. As I said before, I think the popular feeling of this country is much more felt than heard. The public opinion or popular feeling that you see in the newspapers may or may not be public opinion, but the real public opinion of the mass of the people, who have no means of making themselves heard, is always felt. | III. 14,888. |

The same authority went further in expressing the opinion, that to fine and ultimately commit to gaol a very considerable number of people for what they would not regard as a crime, would cause great discontent. This opinion is confirmed by Sir Denis Fitzpatrick, Lieutenant-Governor of the Punjab. He warned us that the prohibition of the manufacture and sale of opium would be a hazardous experiment, and would create an amount of discontent which the British Government could not afford to arouse. This deliberate opinion of high officials entrusted with the responsibilty of governing between 60 and 70 millions of Your Majesty's subjects in India is corroborated by the great mass of the evidence given by private individuals and officials, by Europeans as well as Natives of the country. III. 14,852. III. 18,147.

186. The conclusions at which we have arrived in this Section of our Report, may be summed up as follows :—The moral and physical effects of the opium habit in British India and the Protected States are not of such a character as to call for the enforcement of prohibition except for medical purposes. The effects in China, judging from the evidence, are comparable to the effects of the alcohol habit in the United Kingdom. Nor would the prohibition of the export of Bengal opium permanently or materially diminish the opium habit in China. The moral objections which have been raised against the present system do not, therefore, in the existing circumstances, appear to be strong. On the other hand, the obstacles, administrative, financial, and political, to a system of prohibition, appear to us to be at present insurmountable. Prohibition could not be extended to the Protected States; nor could the existing arrangements for transit of Malwa opium for export to China and the Far East be terminated with justice. On the other hand, prohibition applied to British Provinces only would be Summary of conclusions regarding prohibition.

ineffective and exceedingly troublesome ; for the Protected States which export Malwa opium could before long produce enough to take the place of the Bengal supply now sent to China, and the production of opium in all Protected States, for the purpose of being smuggled into British districts for illicit consumption, would be greatly encouraged. It would be impossible to provide in British India a dispensing agency which could supply the medical and check the non-medical demand with the necessary promptitude and discrimination.

The results of reducing the production of Bengal opium to the quantity required for medical purposes would be disastrous to the finances of British India and injurious to a large number of the poorest cultivators.

Prohibition of opium would probably lead to the increased use of other stimulants more likely to prove deleterious to the people of India.

Finally, the great mass of Native opinion is entirely opposed to the measure, and we consider it established by the bulk of the evidence, European and Native, official and non-official, that the authoritative imposition of prohibition by the British Government would be keenly resented by the races among whom the use of opium is customary ; would be generally regarded with dislike and suspicion as an act of unnecessary interference, and would be followed by widespread discontent.

## SECTION VII.

### Changes short of Total Prohibition.

187. The last head of the Order of Reference left for our consideration is the fourth, which runs as follows: "Whether any change short of total prohibition should be "made in the system at present followed for regulating and restricting the opium "traffic, and for raising a revenue therefrom."

Substitution of private trade for the Bengal monopoly. II. p. 381–82.

188. The question of substituting private enterprise and an export duty for the official agency and State monopoly by which the cultivation, manufacture, and wholesale sale of Bengal opium are now controlled, is one which must be noticed, but we think it unnecessary to argue it at length. The same question has been carefully considered on former occasions and always with the same result. In the Appendices to our Proceedings will be found a paper giving an account of previous proposals in this direction, including extracts from a Despatch addressed to the Secretary of State by the Government of India during the Vice-royalty of Lord Ripon, dealing with this particular question of the substitution of private enterprise for State agency. We quote from the Despatch the following passages, showing the conclusions at which the Government of India had arrived, and in which we concur:—

No. 312, of 19th Dec. 1881. Parl. Return, 1337 of 882.

"27. We shall revert to this question* later, when we come to deal with the possibility of substituting any other system for that which is at present in force in Bengal. In the meanwhile we hold that the following positions have been made good:—

"(1.) The objections of the Anti-Opium Society, so long as their policy is confined to a mere change in the manner under which the opium revenue is raised, are purely theoretical.

"(2.) In order that that policy should have any chance of effecting some practical good, it must embrace within its scope, not only the cessation of any direct connexion between the Indian Government and the manufacture and sale of opium, but the total suppression of the cultivation of the poppy in India.

"(3.) The economical objections to the present system under which the opium revenue is raised may be admitted, but the moral objections will be increased if the economical objections are removed. Nothing would so much tend to the further demoralisation of the Chinese as free-trade in opium.

"(3.) As to whether it is more immoral to raise a revenue by the direct action of Government than to raise it indirectly by taxing private individuals, the question is one on which considerable differences of opinion may exist. It is certain, however, that the mere substitution of the latter for the former system, whilst it would probably be injurious to the interests of the Indian tax-payers, would do no good, and would almost certainly do a great deal of harm, to the population of China.

* * * * * * * *

"77. * * * * * * * * *

"V. The substitution of private agency in Bengal for a Government monopoly would be possible. The change is, however, to be deprecated, inasmuch as the consequence would inevitably be either to involve a loss of revenue, which the Government of India would be quite unable to afford, or to extend the cultivation of the poppy and to intensify those evils which it is proposed to remedy. It would involve, moreover, a serious risk that the use of opium would become far more prevalent than at present in India itself. We cannot, therefore, recommend that so hazardous an experiment which would almost certainly do a great deal of harm, and which it is very improbable would effect any good, should be tried at the expense of the Indian tax-payers."

Private enterprise and capital are now so ready to turn to any industry which shows a chance of profit that it is possible, and by many believed to be certain, that the abolition of the monopoly would result in greatly increased production. It must be remembered that if private enterprise were allowed it would have to be treated fairly. Moreover, the formation of new vested interests in the production of Bengal opium would shackle the Government, which under the present system is in the freest possible position to change its policy to meet any alteration in the attitude of the Government of China or in the circumstances and disposition of the people of India. Our conclusion therefore is that the Bengal Opium Department, which by its Behar and Benares agencies, controls the cultivation and manufacture of Bengal opium, should be maintained.

189. We pass on to the consideration of such improvements as have been suggested in the working of the Opium Department. We think it right to mention here that at Calcutta, Mr. Alexander, the Secretary to the Society for the suppression of the opium traffic, informed us that he had received information which led him to believe that

* That is, to the relative morality of the direct connexion of the Government with the opium trade and the mere taxation of the exports of the drug.

the ryots of Behar were carrying on the cultivation of the poppy at a loss, under some pressure exercised by the officers of the Opium Department. We recorded such evidence as could be produced at Patna and elsewhere on this point, and having made inquiries from many independent witnesses in a position to speak with knowledge and authority on this subject, we have come to the conclusion that the cultivators are free, and are perfectly well aware that they are free, to engage to cultivate poppy or not. There may be here and there cases in the Behar Agency in which pressure has been exercised by subordinates, but we believe them to be quite exceptional. It must be remembered that we are dealing with more than a million cultivators, and if there had been any substantial grounds of complaint, it is certain they would have been brought more prominently to the notice of the Commission. The evidence shows that, as a fact, large numbers of cultivators have from time to time given up cultivation. On the whole, poppy cultivation is decidedly popular with the class of tenants who usually engage in it, and is more profitable to them than the cultivation of other crops which could take its place. It is a favourite crop in particular with the small tenants of the lower castes, whose women and children take part in field work, and if, as sometimes happens, licenses are refused to any of them who are accustomed to the cultivation it is considered a serious hardship. We do not think that the representations made to the Commission by comparatively few cultivators, that the price paid by Government for the crude opium is too low, seriously militates against this conclusion. It is only natural that the feeling, that the price is too low, should influence so large a body of cultivators unable to sell except to the agents of a State monopoly, and bound to accept the price which the State chooses to offer. But the feeling seemed to be shared by many disinterested people, officials and non-officials, and we apprehend that it may be well founded, as the price of the crude opium has for many years remained stationary, while the prices of other produce, the cost of cattle and the value of labour have been rapidly rising. We think therefore, that the Government of India should be left a perfectly free hand to fix, from time to time, the price to be paid to the cultivators, and we understand that since we left India the price has been raised.

III. 12,081–2, 12,522, 12,346, 12,988–91, 12,754–98, 12,872–93, 14,042, 14,050, 14,914–7, 19,131–34, II. p. 325.

II. 2918–9, 2971–5.

III. 12,062, 12,321, 11,209, 11,328, 11,721.

Our colleague, Mr. Haridas Veharidas, has recommended that the Government of India should be asked to issue a general notification throughout the poppy-growing districts in British provinces to the effect that no one is bound to cultivate this crop, unless he may wish to do so. We are of opinion, as already stated, that the cultivators, as a body, are fully aware that the matter is within their own discretion, and a formal notice does not appear to us to be necessary, though we see no objection to its issue, if the Government of India should consider it desirable.

Policy of Government as regards limitation of production.

190. With regard to the area under cultivation, there appears to have been some not unnatural misconception on this subject, which finds expression in the Resolution of the House of Commons, praying Your Majesty to appoint the present Commission. It appears that in the Debates of the House of Commons in April 1891, statements were made by Mr. W. H. Smith, at that time the Leader of the House, and Sir James Fergusson, temporarily representing the India Office, to the effect that it had been the settled policy of the Government to diminish the area under poppy cultivation. It appears from the papers presented to us by the Government of India, that there had been large variations in acreage during the years 1883–84 to 1892–93, and the actual acreage in the year 1889–90 was 482,557, as against 505,843 in 1883–84 and 594,921 in the year 1885–86. We were informed, however, by Sir David Barbour that :—

Hansard, 352, pp. 323, 343.

II. p. 344.

II. 2086.

> "The real reason was, that we had very good crops for a number of years, and, as we did not want to sell more than a certain amount, and a considerable quantity of opium had accumulated in the reserve, it was not necessary, in order to supply the ordinary amount, that the usual area should be put under cultivation."

The Moral and Material Progress Reports on India, annually presented to Parliament, confirm this view, and an explanation to the same effect was given in the House of Commons by Sir J. Gorst a few days after the discussion above mentioned. A passage from the Indian Financial Statement for the year 1891–92 had been quoted as indicating that a rise in the revenue was to be expected, upon which he remarked that "the statement of Sir David Barbour no doubt expressed correctly "the policy of the Government of India." It appears, therefore, that on the part of Sir J. Fergusson and the late Mr. W. H. Smith, a temporary fiscal expedient was regarded as indicating a new departure in the direction of a fixed policy of restriction.*

Hansard, 352, pp. 1152–3.

191. We do not feel called upon to express any opinion on the course adopted by the Government of India or the motives by which they appear to have been actuated. Had we considered that the use of the drug in China depended upon the supply received from

* A Note on this subject is appended to our Report (p. ).

India, and had it been shown that consumption of opium in China was the cause of such moral and physical degradation to that country as to make it incumbent upon the Government of India to put a stop to it at all hazards, we should have made a recommendation to this effect. Taking the view of the question that we do, we are content to leave it to the administrative experience of the Government of India to decide, from time to time, the area which shall be put under poppy, having regard to the interests of the cultivators, and the desirability, in the case of a drug specially liable to abuse, of raising revenue by a high restrictive price, rather than by a large and cheap supply. The limitation of the area for production of Bengal opium will tend to keep up the price of Indian opium generally, and so obviate the necessity for reducing the transit duty on Malwa opium, which would arise in the case of a fall of the price in China and elsewhere.

Suggestions as to the Opium Department. III. 12,079, 12,396–454, 12,052. V. pp. 140, 354.

192. Before leaving the subject of the Bengal Opium Department, we wish to make some further remarks as to the system upon which it is worked. We came to the conclusion on the whole that the system was good, and that it was well worked by a humane and careful body of officers. But some irregular and objectionable proceedings on the part of subordinates were brought to our notice at Patna. These were not serious, but they indicated a certain amount of laxity in the management of the working of the Behar Agency, and in connexion with this subject we think it desirable that the Government of India should again consider the recommendations made by a Commission appointed by them in 1883, after a thorough examination of the working of the Department. Some of those recommendations have been carried into effect more or less completely, particularly in the Benares Agency; but others, though not rejected by the Government, appear to have been held over for one of two reasons, either because they would increase the cost of establishment, or because they would involve the revision of the existing law. The full development in the Benares Agency of the system of dealing direct with the cultivators; the extension of the same system to the Behar Agency, and the better payment of the inferior Native officials, known as the Kothi establishments, seem to be the reforms most required and most likely to benefit the cultivator.

V. App. I. pp. 6, 19, 22, &c. III. 12,124–48.

II. 2948. III. 12,326.

193. We have no proposals to make for the alteration of the special local systems for the production and supply of opium which prevail in the Punjab, and in the small territory of Ajmer-Merwara. We have explained in the second Section of our Report what those systems are, and the reasons for their being exceptional. Nor have we any changes to suggest in respect to the Malwa opium trade, but we wish to say that we are not sure that the transit duty has not sometimes been imposed or maintained at rates higher than is compatible with equity. We think the Government of India should not be in any way prevented from lowering the rate of duty, whenever it thinks that course necessary in justice to the States and individuals concerned in this trade. It is not to the interest of the Government of India to reduce the rate unnecessarily.

Question of employing vendors on fixed salaries. I. p. 163.

194. Some changes in the system of retail vend have been proposed in the course of our Proceedings. A suggestion has been made that the sale of the drug should be intrusted to salaried vendors, having no direct interest in the quantity sold. We have considered this suggestion with care, and do not think it practicable to adopt it. It would not be possible to secure the services of trustworthy agents, and the trouble and cost of checking their sales, and recovering from them the money due and opium unexpended would be immense. They would be as likely as the present vendors to sell smuggled opium, and would not have the same motives or the same power as vendors of the commercial class for helping Government to check smuggling. To explain this last argument we must repeat that at present opium is taxed twice before it reaches the vendor. Bengal opium is taxed first by the artificial price at which it is issued to the vendors by Government. Malwa opium, whether used in Bombay, Madras, or the Punjab, has to pay the transit duty; while, in the last-named province, the local-grown opium is subject to acreage duty. The licensed vendors are everywhere also subject to a second tax in the shape of the heavy sums which they pay to Government for their monopolies of retail vend, and this they cannot evade under the present system by using smuggled opium. Under the proposed system the vendors would not pay this second tax at all; the Government would everywhere be obliged to supply opium direct to the salaried vendors, and the price to the public would depend entirely on the rate fixed by Government, which would necessarily be very high. It would, therefore, be extremely profitable to these vendors to sell smuggled

opium; and even if they refrained from doing this themselves, they would have no motive for finding out whether other persons dealt in such opium, or for incurring the risk and odium of giving information against them. Other reasons might be given, but we do not consider it necessary to go into the question at greater length, as we consider that the arrangements for retail vend of opium in India are sufficiently restrictive, and that looking to the medical and non-medical requirements of the people and their disposition in the matter, it is unadvisable to attempt to make the regulations more severe.

Suggestions regarding smoking preparations of opium. III. 19,593. V. p. 87.

195. The remarks we have hitherto made, refer to the ordinary uses of opium in India. We think, however, that a distinction must be drawn between the common and old established habit of taking opium in the form of pills or infusions, and the comparatively rare and novel habit of smoking preparations of opium, known as *chandu* or *madak*.

Though opium-smoking is regarded as disreputable, we doubt whether public feeling in British India would approve of severe and inquisitorial measures of repression. Moreover, a law aimed at opium-smoking in private houses could only be made effective if it permitted domiciliary visits by the police, and any system involving such visits would be liable to abuse in a much greater degree in India than in Europe. Public opinion would not, perhaps, be opposed to legislation against the use of rooms as smoking saloons, either by the public generally or by so-called clubs. We think this is a measure which might be considered by the Government of India, but we understand that experienced officers think that it would be difficult to suggest legislation which would be effective and yet not open to many objections. We believe that the same difficulty has been experienced with regard to the lower kinds of clubs, where liquor is sold, in the United Kingdom.

IV. 26,218, 26,988. III. 13,785, 19,566.

While we are not prepared to recommend measures of restrictive legislation, we are in favour of making it difficult for smokers of *chandu* and *madak* to indulge in the habit. We recommend that the Government should abandon in all provinces the licensing of shops for the manufacture and sale of these preparations, showing, thereby, that they are in sympathy with public opinion. In the Panjab, Bombay, North-Western Provinces and Oudh, this has already been done, and in those provinces, individuals, though they may manufacture the preparations for their own use, are not permitted to possess a larger amount than 180 grains weight. We recommend that these provisions be extended to the other provinces of British India. The manufacture of small quantities by private persons is wasteful, and the process tedious. Only confirmed smokers, therefore, are likely to incur the expense and trouble. The general adoption of this system, which is undoubtedly repressive, so far as it can be enforced, will tend to prevent the spread of the habit, and lead, it may be hoped, to its ultimate extinction.

## SECTION VIII.

### Opium Arrangements in Burma.

*Introductory.*

Scope of the inquiry made in Burma.

196. When certain members of the Commission were deputed to hold sittings in Burma the system of excise of opium in that province was in a state of transition. In the part of the country known as Lower Burma, which had been under British rule for two generations or more, what may be called the ordinary Indian system of opium Excise had been maintained from the first with some varying differences of detail. When, however, Upper Burma was annexed in 1885, a special system was provisionally imposed, founded on the custom under native rule, and this, in respect to people of Burmese race, was of a prohibitory nature. In 1891–3, the Local Government, with the sanction of the Government of India, decided to strengthen and maintain the new or prohibitory system in Upper Burma, and to extend it with some modifications to Lower Burma.

197. Although the new system had not actually come into force in Lower Burma when the deputation arrived, yet an immediate date had been fixed and all necessary measures had been taken for its introduction. It was therefore the new system which had to be considered and reported on; and having regard to the intention of the order of reference, it was evident that the principal point on which an opinion was required from the Commission in Burma was whether the new system appeared to go far enough in the direction of prohibition and restriction, and whether it would be better to make the prohibitive provisions apply to non-Burmans as well as to Burmans.

In accordance with this view of the position, the deputation came to a resolution as to the evidence which it was desirable to take, which was expressed as follows by the officiating Chairman at the commencement of the first sitting in Burma:—

"We consulted together on our way here, and before beginning our proceedings I think it will be convenient to put upon record what our intentions, as at present advised, are as to the scope of the inquiry we are about to conduct in Burma. We do not intend to go into the arguments for or against the total prohibition of the use or possession of opium by Burmans in Upper Burma, or for and against the same prohibition in Lower Burma modified by the exceptions in the case of habitual consumers holding certificates. We accept the fact that that policy has been adopted and will have to be tested by experience. We do intend to go into the arguments for and against the exclusion of non-Burmans from the prohibition, and to take what evidence is available as to the effect on them of the moderate and immoderate habits of opium smoking and opium eating, and as to how far continued moderation in either habit is usual or the reverse. We want this evidence more particularly in the case of the Chinese. We also want to inquire into the prospects of opium being successfully smuggled into Upper and Lower Burma from China or India, and as to the existing or proposed arrangements to prevent it; also as to the degree to which prosecutions for illicit possession or other breaches of the Opium Act have been lately necessary and are likely to be necessary in future under the new system."

198. In examining witnesses, the purport of the above resolution was generally kept in mind, but evidence which witnesses came prepared to give as to the particular effect of the opium habit on Burmans was not excluded, and was seen to be wanted for the proper consideration of the different treatment of non-Burmans and other questions on which an opinion had to be formed, and the important correspondence containing the inquiry made in 1891, which led to the adoption of the new system, was put in by the Government of India after the deputation arrived in Burma, and was found to contain statements and counter-statements upon which it was desirable to cross-examine some of the officers concerned in that inquiry who appeared before the Commission.

Course of proceedings.

199. The deputation held altogether eight sittings in Burma, six at Rangoon, and two at Mandalay, and examined 38 witnesses, among whom were Mr. Fryer, the officiating Chief Commissioner, and Mr. Smeaton, the Financial Commissioner. Of these 38 witnesses 25 were selected to attend by Mr. Fryer in the way described in his

8371-3. evidence. Mr. Scott, Your Majesty's Minister at Bangkok, and Mr. Warry, the Adviser on Chinese affairs to the Local Administration, who were unable to appear before the deputation, were requested by the Chief Commissioner to forward statements of their views. These statements were received and are printed in
II. pp. 523-4, 536. our Appendices. Mr. Scott was employed in the Shan States for several years, and there made a special study of the opium question, and Mr. Warry was said to be a particularly competent witness as regards the Chinese. A similar statement was obtained, at the request of the Chairman, from Mr. Hildebrand, who was pronounced by Mr. Smeaton, the Financial Commissioner, to be the officer most competent, in his judgment, to give an opinion upon the question of opium consumption
II. 524-5. among the Shans. This statement, also, appears in our Appendices.

II. App. XXXVII. XXXIX. XLI. to XLIII. 200. In addition to this evidence, certain Memoranda were submitted by the Local Government. In these the new system of Excise on opium in Upper and Lower Burma is described, and information is supplied regarding the routes by which opium can be and is at present smuggled into the country, with details of the cases in which convictions have been obtained in criminal prosecutions for smuggling from China, the Shan States, Eastern Karenni, and Siam, in the three and a half years between January 1st, 1890, and 30th June 1893; an account is also given of the policy of the Local Administration in regard to opium in former years; and statements showing the existing Excise Establishment in Upper Burma, and the existing and proposed Excise Establishments in Lower Burma; and the number of persons arrested, convicted, and imprisoned under the Opium Act in Upper Burma in each year since 1889-90, and the number of persons brought to trial and convicted for offences against the Opium Act in Lower Burma in each year from 1884 to 1892.

II. App. XXXVIII. XL. L. Copies of the correspondence between the Government of India and the Chief Commissioner regarding the decision to extend to Lower Burma, with some modifications, the prohibitive system that was in force in Upper Burma, and the Rules under the Opium Act, which have been framed to give effect to that decision, were presented to the Deputation on behalf of the Government of India, and will be found in our Appendices.

### *Historical Account of Opium Excise Systems in Lower Burma.*

Opium in Lower Burma, before British rule.

VII. p. 30-32. 201. Before proceeding to describe the new system it seems necessary to give a short historical account of the opium question in Burma, and of the systems of Excise on opium which have been enforced from annexation in Upper and Lower Burma respectively. The use of opium was known in Lower Burma before the introduction of British rule. It is on record that Cæsar Fredericke, a Venetian merchant, traded in opium to Pegu, the central and most important part of Lower Burma, in the latter half of the 16th century, and remained there selling opium for two years apparently without any hindrance or concealment. Barbosa, also, mentions that opium was an article of trade between Cambay and both Pegu and Ava. Ralph Fitch, the first Englishman who visited Burma, mentions that Cambay (*i.e.*, Malwa) opium was one of the few Indian commodities that was in demand at Pegu in 1586-91, and that Turkish opium was also brought to the port of Orion in
VII. p. 34. Pegu from Mecca. The records of the Dutch East India Company also show that Pegu was regarded as a profitable market for opium in 1613. It seems probable, therefore, that at this time the use of opium as a stimulant must have existed in Burma as it did in the surrounding countries of Asia. The special condemnation of the habit by the Buddhist priesthood and the prohibitive edicts issued now and again by Kings of Burma, or of parts of Burma, seem, as in China, to belong to some later date. All we know is that the Buddhist religion treats the use of all intoxicants as a breach of one of the great commandments; that that Church was a great power in the Burmese States; that it has in recent times specially denounced the opium habit, and has now and again been supported in so doing with spasmodic energy by the Burmese Kings in proportion to the influence exercised over them by the Buddhist hierarchy.

But there is no evidence that the import of opium into Lower Burma was ever prohibited before its annexation by the British Government, or that the prohibition of consumption was ever more than a religious law enforced upon the Buddhists of Burma by the Church and State rule of Buddhist Kings. In the inquiry of 1891, Mr. Norton,
II. p. 563-4. Commissioner of the Irrawaddy Division, stated that, though shortly before the

annexation of Pegu in 1852 the punishment of death was there proclaimed against Burmans using opium, yet the drug could then easily be obtained at a cheaper rate than at present. More than one of the older Burmese gentlemen consulted in 1878, when special inquiries were first instituted regarding the history of the habit, admitted that it had always existed among Burmans, but said that before annexation it was confined to a vicious class who practised it in a more or less concealed way. II. 8004.

Early excise arrangements in Lower Burma under British rule.

202. Turning now to the history of the subject in Lower Burma under British rule, the Provinces of Arakan and Tenasserim in Lower Burma were annexed in 1826, after the first Burmese war. They were at first attached to the Bengal Presidency, and administered by the Deputy Governor of Bengal, subject to the control of the Governor-General in Council. Pegu was annexed in 1852, after the second Burmese war, but this Province was not placed under the Bengal Government. It was administered by a Commissioner and Governor-General's Agent in direct subordination to the Governor-General in Council, Sir Arthur, then Captain, Phayre being the first Commissioner appointed. In 1854 the Bengal Division of the Presidency of Fort William was made a separate province under a Lieutenant-Governor, and in determining his territorial jurisdiction it was decided to exclude Tenasserim and to place the local administration of that Province, like Pegu, under the direct control of the Governor-General in Council. In 1862 the three divisions of Arakan, Pegu, and Tenasserim were formed into the united Province of British Burma, and Sir Arthur Phayre was appointed Chief Commissioner.

II. p. 426.

203. At the time of the annexation of Arakan and Tenasserim in 1826, the retail sale of opium in Bengal appears to have been generally conducted under the farming system, the privilege of sale for specified tracts or districts being let by tender or auction to selected individuals. These farmers were bound to sell only Excise opium manufactured at the Government factories, issued to them at a fixed price which included a duty over and above the cost price of the opium. Under this system opium was taxed in two ways, first by the price the farmer paid for his monopoly, and secondly, by the price he paid for the opium. The same system was extended to the territory acquired in Burma, and Bengal Excise opium was sold there in the same manner as in other parts of the Bengal Presidency. This seems to have been done in ordinary course without discussion, and without protest from any quarter. The number of shops allowed appears to have been limited, and the sale to have been confined to seaport towns and places where a demand for the drug was found to exist.

Introduction into Arakan of system of licenses for sale free of charge.

204. In 1847, in order to check the traffic in illicit or smuggled opium, which was found to be prevalent and uncontrollable, the farming system was abolished in Bengal, and licenses for the retail sale of Excise opium were granted, free of charge, to respectable and responsible persons throughout that part of India. This made licit or Excise opium cheaper, as the only duty levied on it was included in the price at which it was issued to the vendors. These arrangements weakened the inducements to smuggle in other opium. Arakan, being closely connected by land and sea with Bengal proper, and, therefore, specially open to smuggling, was subsequently brought under the new system of free licenses. On the other hand, Tenasserim, being at a distance, and separated by what was then the Burmese Province of Pegu, was left under the old system. Pegu, when annexed, was treated in the same way. In both Pegu and Tenasserim it may be said that the opium was always highly taxed, and the number of shops strictly limited, but in Arakan the unfortunate issue of licenses free of charge for the sale of opium was no doubt one of the causes which led there to a large increase in the consumption of the drug. It was probably of this system, and its abuses, that an old native resident of Arakan was thinking when he told Colonel Strover, as reported by that officer in the inquiry of 1891, that he had seen Government opium hawked about the streets of Akyab in the early days of British rule.

II. p. 426.

II. p. 556.

The subject attracted Sir Arthur Phayre's attention shortly after his appointment as Chief Commissioner of the Burma Province, and in 1864 he strongly condemned the change of system which had been introduced in Arakan. "The Chief Commissioner," he wrote, "left Arakan in 1852. At that time the old system of farming out the various Abkari shops existed. A high price was paid for the privilege of selling opium, ganja, and spirits by different farmers. The price of the drug or liquor was high to the consumer; the consequence was that, although a fair amount of revenue was derived from the Abkari, the number of consumers, especially of opium, was small: they were also principally persons in the seaport town of Akyab . . . . . The Chief Commissioner had Arakan placed under him in 1862. He

Parliamentary Return 266, of 2nd June 1881 (Commons).

then found that since he was last in that Province an entirely new Abkari system had been introduced. Whatever the intention in doing so may have been, the effect thereof can only be deemed deplorable and disastrous. Drinking spirits and smoking opium he found had become almost universal among the Arakanese young men."

Re-introduction of farming system in Arakan, and Sir A. Phayre's Excise policy.

205. Measures were at this time taken to check and discourage the use of opium in British Burma; free licenses were abolished in Arakan, and the system of selling the shops by auction was re-introduced. In the Akyab and Kyaukpyu districts of Arakan the number of shops was reduced in 1863-64 to four, two in each district, and in Sandoway all licenses were withdrawn. In Tenasserim, also, a practice which had grown up of permitting spirits and opium to be carried from the shops at Maulmain to the teak forests was put a stop to. A code of Excise Rules considered suitable for the Province was drawn up by Sir A. Phayre in 1865, and was brought into force with effect from the commencement of the financial year 1866–67. The principles upon which the administration was to be conducted were thus stated in the preamble of the rules.

II. p. 514.

"The object of the Abkaree or Excise Department in British Burma is to raise for the public benefit the greatest possible amount of revenue from the smallest possible consumption of spirituous and other liquors and intoxicating drugs used by the European and the native population. It is not desired to extend the consumption of spirituous liquors and drugs into the interior of the country. At the seaport towns and at large stations where there is generally a considerable foreign population already accustomed to the use of stimulants, the right to sell by retail for consumption on the premises intoxicating liquors and drugs may be farmed or leased out annually as herein-after provided. At no places in the interior of the country is the unrestricted sale of liquor or drugs allowed except on the extreme northern and southern borders of the Province, where it has been found impossible, except by the enforcement of measures which would be vexatious to the whole population, to prevent the illicit sale of opium brought from other countries."

See also Provincial Excise Report for 1867–68.

With the object of preventing the lessees of the right of retail vend from selling cheap smuggled opium, they were required by the rules to take from the Treasury a specified minimum quantity of Excise opium, the quantity being calculated by Deputy Commissioners upon the figures of actual sales as ascertained for previous years.

Opinions of Colonel Fytche, Sir A. Eden, and the Government of India (1867–1872) as to discouraging use of opium by Burmans.

206. Colonel Fytche, who succeeded Sir A. Phayre as Chief Commissioner in 1867, was as strongly impressed as his predecessor with the necessity for discouraging the consumption of opium in Burma.

"The extensive consumption," he wrote in the Excise Report for 1867–68, "of "opium among the inhabitants of this Province is to be deprecated in every way. "Any addition to the general Imperial revenues, which an extensive increase in the "consumption of this drug could bring, would assuredly be ill compensated for by "the increase of crime which such increased consumption among a race, where "gambling and dacoities are a pastime, would bring in its train."

II. p. 516.

207. In 1870–71 the attention of the Local Administration was drawn to the subject of smuggling; and the licensed vendors were themselves suspected of importing and selling illicit opium. District officers were accordingly directed by the Chief Commissioner, Sir Ashley Eden, in the Excise Report for 1870–71 to use every endeavour to put a stop to smuggling. The evils arising from the consumption of opium by Burmans were at the same time recognised, and the necessity for discouraging the use of the drug was insisted on. "There is no sort of doubt," wrote Sir Ashley Eden, "that the consumption of opium and intoxicating drugs has an injurious effect upon "the excitable self-indulgent Burman which it has not upon the Indian or Chinese. "Wherever its use has been adopted in this country, it has led to the immediate "demoralization of the people. 'Opium eater' has become among the Burmans "themselves a term synonymous with that of thief. When they have said that a man "eats opium, they think that nothing more is required to establish the proof of his "belonging to the criminal classes. Obviously then the establishment of new shops "under license or farm in the interior of the country is to be avoided as far as it "possibly can be without giving an uncontrollable impulse to smuggling opium in from "the town circles."

Sir Ashley Eden's views were accepted by the Government of India. "The "Governor-General in Council," wrote the Financial Secretary in July 1872, "cordially "agrees with you that the consumption of opium ought not to be encouraged in

" Burma. The importation of opium cannot perhaps be altogether prohibited, but it " should be restricted as far as may be practicable."

Abolition of farming system and introduction of system of licensing single shops.

208. Act X. of 1871, the Indian Excise Act, was extended to British Burma in April 1872; and in the rules framed under this Act a change of system was introduced. Farms of districts (*i.e.*, of the shops allowed or to be allowed in a district) were abolished for the second time, and in their place licenses for single shops were issued The practice of requiring vendors to take a stipulated quantity of Excise opium was abandoned, but with the same object of preventing the use of cheap smuggled opium vendors were bound by their licenses to account to the satisfaction of the Deputy Commissioner, if the quantity of opium taken fell considerably short of the quantity hitherto sold. The licenses, like the farms, were disposed of by auction. The object of the policy of Government, as again stated in the Rules under this Act, was " to " raise as large an amount of revenue from intoxicating liquors and drugs as is " compatible with the greatest possible discouragement of their use." An extract from the despatch of July 1872, containing the views of the Government of India regarding opium in Burma, was published in the Excise Report for 1871–72; and district officers were directed by the Chief Commissioner to "use their utmost " endeavours to prevent the spread of the consumption of this narcotic, bearing in " mind that, as stated in the concluding paragraph of the despatch above quoted, no " purely fiscal considerations should be allowed to interfere with the arrangements " which may be thought best for the interest of the people committed to their " charge."

II. p. 516.

209. Smuggling by sea appears to have been principally complained of at this time; but in December 1872, the Political Agent at Mandalay reported to the Chief Commissioner that opium was produced in the Shan States, in the Kachin hills, and in the Yunnan Province of China, where the cultivation appeared to be on the increase; that it was freely imported into Mandalay, viâ Bhamo and Theinni, and was subject to a light customs duty only on entering Burmese territory: and that he believed that this opium was smuggled into British Burma, to a considerable extent.

II. p. 518.

Memorandum by Sir C. Aitchison on consumption of opium in Burma.

210. Notwithstanding the injunctions issued by Sir A. Eden, the introduction of the new system in 1872, was followed by a considerable increase in the number of licensed shops, especially in the Pegu Division, where the number of shops was raised from 8 in 1871–72 to 28 in 1877–78. It was probably thought that the new shops were required to substitute an open and licit for a secret and illicit supply; in other words to check smuggling from Upper Burma, and what Sir A. Eden called the smuggling of opium from the town circles. The issues of Excise opium also continued to increase; and in 1878 the attention of the Chief Commissioner, Mr., now Sir, Charles Aitchison, was drawn to the subject when he was reviewing the report on the Administration of Criminal Justice in the Province for the year 1877. A petition was about the same time presented to the Chief Commissioner at Akyab, in Arakan, by a deputation of influential natives of the town, describing the evils arising from the use of opium, and asking for the adoption of stringent measures of repression. Inquiries were instituted, and the opinions of British officers and of educated natives of the country were collected in regard to the extent of the evil and the possibility of remedial measures; and Sir Charles Aitchison, in a memorandum, dated the 30th April 1880, reviewing the results of these inquiries, recorded his conclusion that opium-smoking among the Burmans was spreading, that it caused great moral and physical deterioration, and was one of the most fertile sources of misery, destitution, and crime. " Probably," he wrote, " a variety of causes have contributed to the spread of this vice. " Burma is intellectually in a transition state. The people are becoming emancipated " from many restrictions of their old creed; the inevitable tendency of the education we " give and of the new sense of personal liberty which our Government creates among " an Oriental people is to weaken the sanctions of religious belief and break down the " restraints of social customs. Such results ought neither to surprise nor alarm us. " However much the old-fashioned among the population may regret it, or blame us " for it, we can as easily put back the shadow on the sun-dial as arrest the disintegra- " tion of old-world customs." Though strongly of opinion that measures should at once be taken to further restrict and discourage the consumption of opium, Sir Charles Aitchison considered that prohibition of its use was impracticable, as the habit of opium-smoking among certain classes of the Burmese had existed for many years, and there were in the country large numbers of Chinese and natives of India, " constituting " perhaps the most thriving and industrious section of the population," to whom, as

H. of Commons Return, 266, 2nd June 1881.

he said, the drug was a "necessary of life," and by whom it was "rarely abused." He recommended therefore :—

(1.) That the number of shops licensed for the retail sale of opium should be reduced.

(2.) That with the object of bringing consumers under the ban of public opinion, a rule should be introduced providing that opium should be consumed only upon the premises of licensed shops, and making the possession of opium in any quantity outside the shops illegal, except under a pass from a district officer; and

(3.) That the Code of Criminal Procedure should be altered so as to admit of habitual opium smokers being placed under restraint and required to furnish security for good behaviour as bad characters.

At the same time the restriction of the quantity of opium issued to licensed shops from district treasuries was suggested as a possible measure that might be adopted at any time if it should be thought advisable.

Proposals of Sir C. Bernard.

211. Two months later some remarks in the report of the Revenue Administration of British Burma for the year 1878–79, regarding the evils resulting from the increasing consumption of opium, more especially in Arakan, attracted the attention of the Secretary of State; and, in July 1880, he applied to the Government of India for information in regard to the steps which it was proposed to take for checking the evil.

212. Sir Charles Bernard succeeded Sir Charles Aitchison as Chief Commissioner in 1880, and at the close of the year submitted, at the request of the Government of India, a note containing the impressions and conclusions which he had formed after personally inquiring into the opium question and visiting Akyab and other places where the effects of the consumption of the drug were reported to be most marked. Like his predecessor, he found a remarkable consensus of opinion among Europeans and natives in Arakan, that the use of opium was spreading, and that much injury had been caused to the people in that part of Burma by its abuse; and although he personally had not been able to find much tangible evidence of the injurious effects said to be caused, he was satisfied that the complaints made had substantial foundation and that remedial measures were called for. He considered that the closure of all shops for the sale of opium was not desirable; but deprecated the adoption of Sir C. Aitchison's proposal to enforce by law the consumption of opium upon licensed premises. To discourage consumption, he recommended that the number of shops for the retail sale of opium should be reduced, and that the price of Excise opium on issue from district treasuries to licensed vendors should be raised.

H. of Commons Return, 266, 2nd June 1881.

Orders of Government of India and Secretary of State on these proposals.

213. These recommendations received the approval of the Government of India in January 1881. The number of shops licensed for the retail sale of opium in British Burma was reduced with effect from the commencement of the financial year 1881–82 from 68 to 28, and in 1882–83 the number was further reduced to 18; and the price of opium issued from the treasuries was raised with effect from the commencement of the year 1881–82 to Rs. 28 in Arakan, and Rs. 32 in the rest of the Province. The rate in Arakan was fixed lower than in the rest of the Province on account of the proximity of this district to Bengal, and the facilities which exist for the illicit introduction of opium from that province. The policy of discouraging as far as possible the consumption of opium in Burma was approved by the Secretary of State in a despatch dated 30th June 1881; but a stoppage of the supply of opium and prohibition of its use were not considered desirable, as persons accustomed to the drug were unable with safety to suddenly give up its use, and the legitimate requirements of the Chinese and natives of India in Burma had to be provided for.

214. It may be mentioned here that the official inquiries which had been instituted in regard to opium in Burma in 1879, and Sir Charles Aitchison's memorandum attracted attention in England; and a resolution was adopted at the meeting held at the Mansion House on 25th October 1881, declaring that the results of the sale of opium in British Burma were a disgrace to our government in India.

*System introduced into Upper Burma.*

Excise measures adopted on annexation of Upper Burma.

215. The measures taken by Sir Charles Bernard apparently checked consumption for a time, but as evasion of the law was easy and the demand for opium was strong, a system of illicit sale of opium, at places other than the licensed shops, was organised throughout the country, and the quantity of opium issued from the district treasuries

began again to rise. In 1884–85 the subject was further discussed, and was under the consideration of the Chief Commissioner when Upper Burma was occupied in November 1885. The question of Excise arrangements for the Upper Province was at once considered, and in the instructions for the guidance of civil officers in the administration of the recently-acquired territory issued by the Chief Commissioner, Sir Charles Bernard, in a Regulation, dated 19th March 1886, the sale of opium and liquor to Burmans was forbidden, but the establishment of a limited number of shops for the sale of opium to Chinese was permitted. In the same month the Society for the Suppression of the Opium Trade submitted a memorial to the Secretary of State, in which they referred to the opinions expressed in regard to opium in Burma by Sir Charles Aitchison in his memorandum of 30th April 1880, by Mr. Hodgkinson, the Commissioner of the Irrawaddy Division, in the Provincial Excise Report for 1883–84, and by Mr. Copleston in the Provincial Excise Report for 1884–85. They urged that the policy of discouraging the consumption of opium in Lower Burma should be carried further in the direction of the total prohibition of the sale or use of the drug, and that a similar policy should be adopted in the newly-acquired territory in Upper Burma. The memorial was forwarded by the Secretary of State to the Government of India for information, under cover of a despatch dated 18th March 1886. "I have no "doubt," wrote Lord Kimberley, "that full attention will be paid by the Government of "your Excellency to the important subject of the consumption and sale of opium in "Burma, especially in the newly-acquired territories, and I shall be glad to be informed "in due time of the arrangements which may be decided on."

Parl. Return, C.—6562, of 1892, pp. 41, 42.

On receipt of this despatch, the Chief Commissioner was requested, in May 1886, to ascertain and report the real state of the case in regard to the consumption of opium and liquor by Burmans in Upper Burma.

216. The facts as to Upper Burma in the time of the Burman Kings may be gathered from a report submitted to the Government of India by Sir C. Crosthwaite, who had succeeded Sir C. Bernard as Chief Commissioner. In this letter, under date 20th March 1888, it is stated as follows: "On our taking over the country stringent rules "were enacted, and somewhat rigorously enforced against the sale of opium. Many "Chinese were flogged and otherwise punished for engaging in a traffic, which, although "it may have been nominally prohibited, was allowed to go on under the Burman "Government."

Facts regarding consumption of opium in Upper Burma before annexation.

In a second report, dated the 20th April 1888 the evidence is quoted of a high official of the late Burmese Government, U. Pei Sei, magistrate of the city of Mandalay, under both King Mindon and King Thebaw. It was as follows: "The Burmese Govern- "ment never openly recognised the opium and liquor traffic in Upper Burma; those "persons only were punished who sold opium and liquor to Burmans. The Burmese "Government admitted the existence of the traffic by levying customs dues through an "officer called Dewun Akunwun, on all liquor and opium imported into Upper Burma." On this subject we have, also, the evidence of the Rev. J. S. Adams, of the American Baptist Mission, who gave evidence before the Commission in London. He was in Upper Burma from 1874 to 1879, that is, in the last years of King Mindon Min, and in the first year of King Thebaw, whom we deposed in 1885. According to his evidence, the prohibition of the use of opium and liquor by Burmans was at that time strongly enforced by the native authorities in Upper Burma, the Buddhist priests actively co-operating with the King and his officers in the matter, acting as spies upon the people in this and other actions contrary to the Buddhist law, and themselves bringing accusations against the offenders. But this was, so to speak, a law personal to the Burmans, not a territorial law; for Mr. Adams also says that the Chinese, Shans, and Kachins were not interfered with. They bought their opium and opium-pipes with them, and smoked without restriction. It has been noted above, that in 1872 (two years before Mr. Adams was in Mandalay), the British Political Agent there was reporting to the Government of India that much Yunnan and Shan opium was imported into Upper Burma at a low duty, and was, he thought, smuggled into British Burma. Mr. Adams believed the prohibition to have been effectual in the case of the Burmans, and it may have been so in Mindon Min's time, but there is evidence to show that the effect was spasmodic and very far from complete at any time. Mindon Min was a great zealot in religion, much under the influence of the priests, and constantly exerted himself to compel the Burmans to conform to the Buddhist law of abstinence from intoxicants. His father, Tharawaddi, is said to have gone mad from intemperance, and he himself was a priest before he became King.* These

Parl. Return C.—338, of 1888, p. 9.

Parl. Return Commons 338, 9th August, p. 12.

I. 308.

I. 312–14.

II. 7611, 7692.

II. 8013.

* See pp. 118, 126, Vol. I., "Burma Past and Present," by Lieut.-General Albert Fytche, C.S.I.

facts may explain his special activity in supporting the priesthood in enforcing the religious law of abstinence. Under his successor, King Thebaw, according to Mr. Smeaton's evidence before the Commission, Mindon Min's prohibitive edicts were almost altogether neglected, and even some of the priesthood took to the use of intoxicants. When our troops occupied Mandalay in 1885 enormous stores of opium were found in the Chinese merchants' quarters, and they admitted that they supplied many Burman consumers. This is proved by the report of Mr. Carter, Deputy Commissioner, in the inquiry of 1891, and was confirmed by Mr. Smeaton in his evidence before the Commission. The Rev. Dr. Cushing also stated that opium was secretly consumed, to some extent, by Burmans when he was in the country before annexation, and Mr. J. E. Bridges gave similar evidence. The religious law remained the same, but the degree to which it was enforced in each reign by the secular arm varied according to the character of the King. It should be added that Chinese, Shans, and Kachins were always allowed to possess opium and to import it for their own use.

II. 8004.

8003.

6926. 7536.

6923, 6932, 6934, 7351, 7540.

Excise arrangements sanctioned for Upper Burma in 1888.

217. Meanwhile the subject attracted further attention in England during the summer of 1887, and on 22nd July, in reply to a question in the House of Commons, the Under Secretary of State said that whatever Excise regulations were made in Upper Burma would be "for the purpose of restricting the sale of spirits and opium in the interest "of public order, and of preventing their sale to Burmans, and most certainly not "with the view of raising money thereby." The necessity for taking the strongest precautions to prevent the sale of opium and spirits to Burmans in Upper Burma was subsequently impressed upon the Government of India in a despatch dated 18th August 1887. In the report of March 1888, already quoted, Sir Charles Crosthwaite, who was then Chief Commissioner, supported the proposal to continue to prohibit the sale of opium to Burmans in Upper Burma, and recommended that the Opium Act should be extended to the Upper Province with the exception of the Shan States to enable Government to control the traffic in opium and to check consumption by non-Burmans by raising the price of the drug; that an import duty of 15 rupees a viss (3·65 lbs.) should be imposed on all opium brought into the country, and that shops for the retail sale of opium to non-Burmans should be licensed in specified localities. Rules under the Opium Act were at the same time submitted to give effect to these proposals. The measures proposed met with the approval of the Government of India; the Opium Act was extended to Upper Burma and the draft rules submitted were sanctioned and issued. Some reduction in the number of shops which it was proposed to license for the sale of opium to non-Burmans was however suggested as desirable, and the number was finally fixed at 18 instead of 21 as at first recommended. The correspondence was communicated to the Secretary of State in a despatch from the Government of India dated 16th June 1888, and on 9th August 1888 the Secretary of State replied that he had given careful consideration to the arrangements and accepted generally the conclusions which had been arrived at. The settlement of administrative details was left to the Chief Commissioner and to the Government of India, but attention was drawn to the injunction contained in the despatch of 18th August 1887, and in another despatch regarding Excise arrangements in India generally, dated 19th April 1888, "to "the effect that a demand for opium must not be created or stimulated at places or in "tracts where such demand does not exist or is at present very restricted and that "such demand is everywhere to be discouraged."

Parl. Return (Commons), dated 9th August 1881, p. 9.

Policy in Lower Burma, 1885–90.

218. No material change was introduced into the Excise administration of Lower Burma, but the policy of reducing the number of shops licensed for the sale of opium was continued, and in 1887–88 the total number was reduced to 15. In Arakan only one shop had been allowed in the whole division since 1885. But in spite of these arrangements, there was no signs that the habit was diminished in Arakan, and in other divisions there were large tracts without shops where much opium appears to have been consumed in an illicit way. Sir Charles Crosthwaite, therefore, in the review of the Provincial Excise Report for 1887–88, expressed an opinion that the policy had been pushed too far, and that it was not possible to prevent the use of opium in districts where there was a large actual demand for it by refusing to license shops for its sale. On the principle, therefore, that a demand for opium should be regulated rather than ignored, five additional shops for the sale of the drug were licensed with effect from the year 1889–90, bringing up the total number of shops licensed in the Lower Province to 20.

Parl. Return, C.—6562 of 1892, pp. 35, 36.

*Circumstances in which present System was introduced throughout the Province.*

219. In the memorial regarding the consumption of opium and drugs in India, which was presented to the Secretary of State in 1890, the Anti-Opium Society expressed satisfaction at the closure of two more shops in Lower Burma since the submission of their previous memorial to Lord Kimberley on the 4th March 1886, but observed that they could not regard this as a satisfactory rate of progress in the diminution of temptations to vice. They repeated, therefore, the arguments already put forward in favour of prohibition in Lower Burma, and referred to the supposed success of the prohibition of *ganja* in 1872 as an additional argument in favour of the prohibition of opium. In respect to Upper Burma they quoted the passages in their former memorial, which urged that total prohibition would be easier than regulation and would be more in accordance with the religious and moral sense of the people, and expressed regret that this view had not commended itself to the Government of India, and that fourteen shops for the sale of opium, professedly to the Chinese and Shan population, had been opened in the province.

The Anti-Opium Society's Memorial of 1890, C.—6552, p. 110, and Sir A. Mackenzie's first proposals.

220. The memorial was referred to the Chief Commissioner for any remarks he might wish to offer regarding Burma; and Sir Alexander Mackenzie, who was then Chief Commissioner, replied to the following effect in a letter dated 2nd February 1891. The increase in the consumption of opium in the province during the preceding four years was not thought to indicate any serious extension of the practice of opium eating and smoking among the Burmese, or to be greatly disproportionate to the increase of population. In his opinion, however, the reports which had from time to time been submitted showed that the consumption of opium by Burmans in some districts of Lower Burma was already very considerable and that it was increasing, though not to any very serious extent, save in special tracts such as Arakan, the seaport towns, and the delta of the Irrawaddy. The existence also of traffic in smuggled opium made it impossible to accept the figures showing the quantity of opium issued by Government to licensed vendors as a correct indication of the total quantity of opium consumed. The use of opium by persons of Burmese race was denounced by all respectable Burmans and by every European authority in the province, official and non-official, as deleterious and harmful in a very special degree, and the measures taken to discourage consumption by reducing the number of shops for the retail sale of the drug had produced very little effect upon the quantity of opium issued from the Government treasuries. Sir A. Mackenzie therefore declared himself willing to see the possession of opium in any quantity by natives of Burma declared illegal, except under medical or special certificate. To provide for the case of Burmans of the present generation who were too old to break themselves of the habit with safety, it was suggested that men of not less than 40 years of age who were accustomed to the use of opium, might be permitted to register themselves as foreigners for the purpose of the Opium Act and Rules, a certificate being granted on registration authorising the holder to purchase and possess the ordinary legal quantity of opium. Absolute prohibition of the use of opium in the province was not, however, recommended. Such a prohibition would, it was thought, be an unjustifiable interference with the habits of the Chinese, Shans and other foreign residents in the country, who, as had been frequently explained, were in the habit of using opium without "ill effects or even with "beneficial results," and would be quite impossible to enforce. The prohibition of *ganja*, which was at one time supposed to have stamped out the use of the drug in Burma, was admitted to have been ineffectual, and the prohibition of opium would be even more difficult. Failing prohibition of the possession of opium by Burmans, Sir A. Mackenzie declared himself "an advocate for the absolute closing of opium taverns "to men of Burmese race," as he was satisfied from his experience in the Central Provinces "that it was desirable to put a stop to the temptations of gregariousness "in vice;" he had "no faith in the check supposed to be exercised by public opinion," which was the main argument relied on by those who advocated the restriction of consumption to licensed premises.

Parl. Return, C.—6562, of 1892.

221. On receiving this memorandum the Government of India expressed themselves willing to sanction the proposal for the prohibition of the use of opium by Burmans in Lower Burma, if they could be satisfied, (1) that the evil to be removed was as great as was depicted, (2) that it would be practicable to enforce the prohibition, and (3) that its enforcement would not be accompanied by evils as great as that which it was desired to remove; and they informed the Chief Commissioner that the possible loss of revenue involved would not be allowed to stand in the way of

Orders of Government upon Sir A. Mackenzie's first proposals.

the adoption of the measure if they were satisfied that it was practicable and desirable. The existence of practical unanimity of opinion among respectable Burmans and Europeans acquainted with the country, that opium is specially deleterious to persons of Burmese race, was admitted; but it was pointed out that the papers on the subject, though they contained many statements of opinion, did not contain many facts in support of the opinions. The Chief Commissioner was accordingly requested to test the correctness of the generally adopted view as to the difference of the effects of the use of opium upon Burmans and non-Burmans by the collection of statistics, facts, and figures, and to report further as to the possibility of enforcing the proposed prohibition, and as to the means which should be adopted to prevent hardship to persons already accustomed to the use of the drug. The failure of the existing preventive agency to restrict the licensed vendors to legitimate sales at their shops, and to prevent them from supplying other localities through secret agents was noticed as proof of the difficulty of enforcement of restrictive rules, and the danger of the prohibition resulting in a system of police espionage and extortion that would make our rule odious and unpopular were indicated as questions requiring very serious consideration.

Parl. Return, C.—6562, pp. 102–105.

222. The willingness of the Governor General in Council to sanction the complete prohibition of the smoking of opium by persons of any race on the premises of licensed shops was at the same time communicated; and this question was shortly afterwards disposed of by the resolution of the Government of India, dated 25th September 1891, which prohibited the smoking of opium upon licensed premises throughout the whole of India.

The inquiry of 1891, and Mr. Smeaton's Note upon the results.

223. The Chief Commissioner, in a Resolution dated 29th August 1891, issued orders for the collection of the statistics, facts, and figures required by the Government of India as to the difference in the effects of opium upon Burmans and non-Burmans. Commissioners in Upper Burma also were directed to report how far the prohibition of the use of opium by Burmans in that part of the country had been effectual.

II. pp. 481–3.

224. The reports and returns submitted in accordance with these orders by Commissioners, Deputy Commissioners, Police officers, and Superintendents of gaols were reviewed and analysed by the Financial Commissioner, Mr. Smeaton, in a note dated 27th April 1892. The results of the policy pursued in regard to opium in Lower Burma were said by him to constitute a grave indictment against the British Government, and to demonstrate the necessity for the absolute and speedy prohibition of the use of opium by Burmans; though the inquiries showed that the evil effects of the opium habit on mind and body were much less marked in the case of other races such as Chinese, Shans, or Indians, he considered that the licensing of shops to supply them was inconsistent with effectual prohibition in the case of Burmans. He proposed, therefore, that all shops for the sale of opium should be closed in Lower Burma, and that the possession and use of opium should be prohibited, except by such Burmans as might declare themselves and might be ascertained by medical examination, to be physically incapable of discontinuing its use, and by such non-Burmans as might, on similar examination, be held likely to be permanently injured, or to suffer permanently in mind and body by abstention from it. Persons thus permitted to use opium should be registered and licensed, and opium required for their use should be supplied from township officers or sub-divisional dispensaries. Burmese doctors and professional tattooers should also be registered and licensed, and opium should be supplied to them for use in the quantities and for the purposes certified by the *thugyis* or headmen of their villages. On completion of the registration, no new entries in the registers of persons of Burmese race should be permitted, but registration of non-Burmans applying for permission to use opium might be continued. To enforce the prohibition of the use of opium by any but registered consumers, he recommended that preventive establishments should be strengthened; that the Burmese priests should be induced to co-operate in the suppression of illicit traffic; and that Government should insist on the punishment of imprisonment being inflicted, with or without fine according to circumstances, upon all offenders against the prohibition.

II. pp. 538–47.

225. As regards Upper Burma, Mr. Smeaton observed that the reports showed that the consumption of opium was small as compared with Lower Burma, and that there appeared to be grounds for believing that the original prohibition of sale and the recent prohibition of possession of opium by Burmans, coupled with the restrictions placed on the traffic and sale of opium and the rigorous measures taken against smuggling, had at least to a great extent arrested the progress which opium was certainly making among the people before and at the time of the annexation. The evil, however, existed, and for

its complete eradication he recommended that all shops for the sale of opium should be closed, and that the measures proposed for Lower Burma should also be adopted in their entirety in the Upper Province.

Sir A. Mackenzie's second proposals, 1892.

II. 537, 538.

226. Sir A. Mackenzie, in a Minute dated 30th April 1892, drawn up as he himself explained under great pressure on the eve of his departure from the province, stated briefly the conclusions at which he had arrived from perusal of the papers, but he was unable to prepare as he had intended a detailed review of the whole case. The statistics afforded, in his opinion, strong confirmation of the correctness of the views held throughout a long series of years by almost all authorities, official and non-official, European and native, as to the injury caused by the consumption of opium in Burma, and brought out the fact that the evil was a rapidly growing one in many parts of the Lower Province. They also led him to the conclusion that he did not go far enough, in his letter of 2nd February 1891, in proposing to limit the prohibition of the use of opium to Burmans while leaving the shops for the sale of opium open to foreigners. The limitation was, as he explained, mainly proposed in the interests of the Chinese, but the number of male Chinese of all ages in Burma was less than 30,000, and although he believed that most of the adults used opium when they could get it, and that it did them little harm, it would, he thought, be possible to provide for their wants without maintaining shops for the sale of the drug. There were, it was true, over 200,000 adult natives of India in Burma, but there was no reason to believe that any very large number of these were consumers of opium; while as regards Shans and Kachins he now found that officers acquainted with them held that opium was nearly as deleterious to them as to Burmans. He recommended, therefore, that all shops for the sale of opium throughout Burma should be closed, and that opium should be supplied to hospitals and dispensaries for issue there of not more than three tolas at a time at a price of Rs. 5 per tola to two classes of purchasers only (1) to persons holding a medical prescription authorising them to receive for some special cause a daily dose of opium for a period not exceeding 14 days, (2) to persons holding annual licenses to buy and use opium habitually, such licenses being granted, on payment of a special fee of Rs. 10 for each license, to Chinese, and to persons of other races producing a medical certificate that the habitual use of opium was necessary for their health, and to tattooers and native medical practitioners. Enforcement of the prohibition with sufficient completeness was held to be possible if all shops for the sale of opium were closed throughout the province; and in Sir A. Mackenzie's opinion Burmans were not at any time likely to be severely victimised by the police. "I wish it to be understood," he wrote, in conclusion, "that while I advocate the suppression of the opium trade in Burma, I "do so solely with reference to the special circumstances of that country and the "condition of the people. I do not believe that opium in India or China does any "great harm to the majority of those who use it, *i.e.*, to moderate smokers and eaters. "But here in Burma we are brought face to face with the fact that the religion of the "people specifically denounces the use of the drug; that their native kings treated its "use as a heinous offence; that these ideas are so deeply rooted in the minds of the "people that every opium consumer feels himself to be, and is regarded by his "neighbours as, a sinner and a criminal; that the people are by temperament pleasure-"loving and idle, and easily led away by vicious indulgences; that they have little "self-restraint, and are always prone to rush into extremes. If a Burman takes to "drink or opium he wants to get drunk or drugged as fast as he can or as often as he "can. All this seems to me to point to the necessity of special treatment. Then, to "crown all, we have the fact that in Upper Burma we actually do prohibit the sale to "and possession of the drug by Burmans. I cannot see how we can properly have one "policy north of latitude 19° 30′, and a different policy south of it, among people of "the same race and living under the same Local Administration."

Final recommendations by Mr. Fryer.

II. pp. 624-628.

227. Mr. Fryer, the officiating Chief Commissioner, was then requested to prepare the detailed review of the whole case which Sir A. Mackenzie had not been able to do, and to submit his own opinion and recommendations, and this he did in a note dated 4th July 1892. Mr. Fryer pointed out various inaccuracies and inconsistencies in Mr. Smeaton's statements and calculations, and expressed the opinion that his estimate of the number of habitual Burman consumers was much exaggerated, but he agreed that the Burmans were better without opium, and was in favour of further strong measures of restriction in Lower Burma. He was, however, adverse to a policy of total prohibition, and considered that it would be impracticable to enforce it. The system in Upper Burma of prohibiting the use of opium by Burmans and allowing it in the case of non-Burmans had in his opinion worked well and reduced the use

of opium by Burmans in that part of the country since annexation, and it was undesirable to alter it. He recommended, therefore, that the prohibition of the possession and use of opium by Burmans should be extended to Lower Burma; that all consumers, Burman and non-Burman, should be registered; that registered Burman consumers should receive certificates authorising them to purchase and possess opium; and that a maximum quantity of opium should be fixed for issue to each licensed shop in accordance with the ascertained number of legitimate Burman and non-Burman consumers.

Orders by the Government of India, 1893.

228. Orders were issued by the Government of India in March 1893. They held that the extent of the evil had been exaggerated; that the statistics collected were wanting in accuracy, and the inferences drawn from them were in some respects unsound; that the total prohibition of the use of opium, as proposed by Sir A. Mackenzie in his minute of 30th April 1892, was uncalled for and impracticable; and that any attempt to enforce such a prohibition would be accompanied by harassment of the people and risk of oppression to an extent for which there could be no justification. There was, however, they thought, evidence to show that the policy of prohibiting the use of opium in Upper Burma by Burmans had been attended with considerable success, and the differential treatment of the two provinces was recognised as undesirable. They determined, therefore, with the approval of the Secretary of State to assimilate the law in Lower Burma to that which existed in the Upper Province, and Mr. Fryer's proposals were accordingly sanctioned.

II. 628–31.

Enactment of rules to give effect to the new system.

229. Rules under the Opium Act to give effect to these orders were framed and submitted by the officiating Chief Commissioner in May 1893, but scrutiny and revision were found to be necessary, and the rules in their final form were not approved and published until November 1893. In the draft rules as originally submitted the right of all non-Burmans over 20 years of age to obtain opium was admitted. They were required, however, to register themselves as consumers, and this the Government of India declined to sanction on the ground that the orders issued merely directed the assimilation of the law in Lower Burma to that which was in force in the Upper Province. They had no objection to the enumeration of non-Burmans, as a means of ascertaining the number of opium consumers, but were not prepared to sanction rules making registration a condition necessary to the lawful possession of opium by a non-Burman. No cause had in their opinion been shown for subjecting non-Burmans in Lower Burma to restrictions that were not in force in Upper Burma, or in any other part of India.

II. App. XL. and L.

I. pp. 488, 489.

230. Against this refusal to sanction the compulsory registration of non-Burman consumers of opium, the Anti-Opium Society submitted a memorial to the Secretary of State urging that the policy of prohibition as carried out in Upper Burma was admitted to have completely failed. They asked, therefore, that it should be made a "universal rule that no inhabitant of Burma, whatever his race, shall be able to "purchase or possess opium unless his name is entered on the register of opium con- "sumers, and then only in such quantity as may be shown by sufficient evidence to be "necessary for his own personal use." The memorial was considered by the Government of India, but the previous decision was adhered to, and on the 6th December 1893 they informed the Secretary of State that in their opinion no sufficient cause had been shown for extending the prohibition to non-Burmans, and that such extension would increase the chances of failure of the experiment which they had resolved to attempt.

*Description of present System and Views of the Commission as to Prohibition in the case of Burmans.*

Description of the new system.

231. The system which has been introduced is of a somewhat complicated character. It is an attempt to assimilate the law in Lower and Upper Burma, with certain differences, which have had for the present to be maintained. For this reason and because it is a new system and a subject of controversy it seems advisable to set out the principal provisions of the rules in the footnote below.*

* *Main Provisions now in Force.*

II. App. XL.

The cultivationof the poppy is prohibited throughout Burma, except in certain outlying tracts consisting of Kachin villages in the Katha, Bhamo, and Upper Chindwin districts in Upper Burma. Cultivation is permitted in the Kachin villages on political grounds, as it existed there uncontrolled prior to annexation, and the people have hitherto been allowed great liberty. The exact area under poppy is unknown as the localities in which cultivation is carried on are for the most part beyond the sphere of regular administration. The cultivation is subject to a light acreage duty.

(*Footnote*—continued.)

In Lower Burma, as was the case under the old system, the only opium allowed to be used is Bengal Excise opium, and the import of other opium, except Turkish opium for medical purposes, is prohibited. Bengal Excise opium is imported by Government and is stored in the district treasuries for issue to vendors as required. The price at which it is issued to licensed vendors has been maintained at the rates existing before the introduction of the new system, viz., 28 rupees per ser in Arakan and 32 rupees per ser in the rest of the province. The cost price to Government being only Rs. 7 annas 4 the ser, it will be seen that a heavy duty is put on the opium before it reaches the licensed vendors' hands. Another heavy duty is imposed in the fees paid for the licenses, so that the vendors to obtain a profit from their business have to raise the retail price to the consumers to Rs. 50 per ser.

In Upper Burma Government Excise opium and opium from China and the Shan States are both allowed to be used. Excise opium is imported and issued by Government in the same manner and at the same price as in Lower Burma, and persons holding licenses for wholesale or retail vend of opium may import by land under passes and on payment of an import duty of 15 rupees per viss (3·65 lbs.) opium and poppy heads produced in China, the Shan States, and other countries. The continuance of the import of this opium into Upper Burma has been permitted since annexation by our Government for political reasons and because the consumers are accustomed to it, but the duty has been made fifteen times heavier than it was before annexation. It is also thought that if the import of this opium were absolutely prohibited it would be impossible to prevent extensive smuggling across the land frontier of Burma.

Wholesale licenses may be granted in Upper Burma to non-Burmans importing opium from Yunnan or the Shan States for sale to retail vendors on payment of a fee of Rs. 20 for each license. These licenses are limited in number and said to be usually held by persons also holding licenses for retail vend.

Opium and poppy heads produced in the Kachin villages in the Katha, Bhamo, and Upper Chindwin districts can be sold to any non-Burman but are liable on transport to any area in which the cultivation of the poppy is not permitted to the same duty as is imposed on opium and poppy heads imported by land into Upper Burma.

Both in Upper and Lower Burma medical practitioners, meaning persons who have been registered under an English Medical Act, or who have received medical diplomas from an Indian university and who practice medicine according to European methods, and pharmacists, meaning persons who deal in European medicines and drugs, and who hold licenses under the opium rules, are permitted to import by sea opium, medical preparations, and poppy heads not produced in India. Medical practitioners are under no restrictions as to the quantities of opium, &c. which they may import. Pharmacists however are ordinarily only allowed to import quantities not exceeding one ser in weight in the case of opium or of medical preparations of opium and 10 sers in the case of poppy heads, though the Financial Commissioner is authorised to sanction the import of larger quantities in special cases.

On opium imported by sea by medical practitioners and pharmacists a duty of 24 rupees per ser is levied under the Indian Tariff Act.

Merchants or travellers entering Upper or Lower Burma by land from China, the Shan States, or any other country out of India, are permitted to import and possess while in Burma opium not produced in India in quantities not exceeding five tolas for each person for the personal use of themselves and their attendants, and horse dealers bringing horses into Burma from the Shan States or from a country other than India are similarly permitted to import and possess opium not produced in India in any quantity not exceeding five tolas in weight for each horse for the time being in their possession. This is a limited form of an old privilege, and in the interest of commerce and free intercourse it has not been thought prudent to abolish it altogether.

Opium may be exported from Burma by Government only.

Throughout Burma any person may possess opium in any quantity not exceeding three tolas, and medical preparations of opium in any quantity not exceeding six tolas in weight, and poppy heads in any quantity not exceeding five sers, which he has purchased for medical purposes from a medical practitioner, a pharmacist, or a doctor, meaning a person practising medicine according to Asiatic methods and holding a license according to the rules.

Non-Burmans may also possess for their own use opium in any quantity up to three tolas in weight, and poppy heads in any quantity up to five sers in weight, which have been lawfully obtained, and in the Kachin villages in Upper Burma, where the poppy is grown, they may possess any quantity of opium or poppy heads there produced. In Upper Burma non-Burmans are permitted to possess Chinese or Shan as well as Government Excise opium, but in Lower Burma they are permitted to possess Government Excise opium only.

In Upper Burma the possession of opium by Burmans except for medical purposes is prohibited. In Lower Burma the same rule applies with the exception that those Burmans over 25 years of age who have applied to be registered as habitual consumers and proved their assertion are treated as non-Burmans and may possess opium, lawfully obtained in limited quantities, for their private consumption. The exception is a temporary one made out of consideration for the present generation of habitual consumers. When the men now registered die out the law will be the same in Lower as in Upper Burmah.

A Burman, throughout Burma, means a person born of parents both of whom belong to races indigenous to Burma, except a Kachin, a Shan, or a Palaung. A non-Burman, means every person who is not a Burman.

In Lower Burma, the registration of Burman habitual consumers was commenced in April 1893, and was continued until 30th June 1894. The registers were then closed, and no Burman may now be registered unless he can prove that he was prevented by absence, or other reasonable cause, from entering his name before the prescribed date. Each registered consumer is furnished with a certificate of registration, and is required to produce it when buying opium as a proof that he may legally possess it.

Registration was voluntary, but notices were issued for the information of consumers, in March 1893, that after the introduction of the new rules, no unregistered Burman in Lower Burma, would be permitted to possess opium except for medical purposes. The rules provide for the periodical verification and for the proper maintenance of the registers by the removal of the names of any persons who may wish to discontinue the habitual use of opium, and by transfer from one register to another of consumers who may change their place of residence.

In order to enable registered habitual consumers to obtain opium out of their own townships when temporarily travelling or residing elsewhere, special licenses may be issued with the sanction of Commissioners authorising any person to possess opium and medical preparations made therefrom in such quantity and for such period as may be specified in the licenses, but the possession of Government Excise opium only may be authorised in Lower Burma.

232. It may be stated broadly that for Burmans the new system is (with a small exception which will soon disappear) one of very stringent prohibition of all use or possession of opium except for medical purposes, enforceable by heavy fine and imprisonment. For non-Burmans it is the old system not materially changed. The new rule of fixing a limit of total quantity to be sold at each shop is intended to prevent illicit sale to Burmans, rather than to curtail the supply to non-Burmans. There are, as before, shops or offices from which the latter can buy opium without reference to the object for which they require it, but such places are few and far between, and opium can be obtained only in small quantities and at a very high price. Short of absolute prohibition, it would be difficult to devise a more restrictive system.

Remarks by the Commission on the new system, and on the inquiry and correspondence which preceded it.

233. It is evident that the Government of India accepted the policy of prohibition to Burmans with great hesitation, and the reasons they gave for hesitation in their despatch to the Secretary of State, dated the 22nd March 1893, appear to us to be undoubtedly weighty. As to their remarks in that despatch on the returns and reports of the inquiry of 1891, and the conclusions drawn therefrom by Mr. Smeaton and Sir A. Mackenzie, we agree that the estimate of the total number of consumers in Lower Burma cannot be held to be proved by the statistics; but in spite of the gaol returns quoted by the Government of India we are disposed to accept the view of the majority of Burma officers, that the opium habit has been increasing in Lower Burma in recent as well as in earlier years. With the other remarks of the Government of India on the inquiry of 1891 we generally concur, and in particular we entirely agree that the returns of persons morally and physically wrecked by opium are calculated to give a greatly exaggerated idea of the degree to which Burmans are injured physically or morally by the habit. The examination of Mr. Smeaton himself and the other evidence which we have taken in Burma on the point confirm this view. We refer to the evidence of Mr. Bridges, Commissioner, Mr. Irwin, Deputy Commissioner, and Doctors

II. pp. 628–31.

II. pp. 183–88, 207, 208, 209–14, 225, 240.

(*Footnote*—continued.)

In Lower Burma, shops for the retail sale of opium are retained in places where there is a considerable number of non-Burmans, or of registered Burman consumers, and in Upper Burma, shops are located at places where there is a considerable non-Burman population addicted to the use of opium. The fees charged for the licenses for vend in both promises are determined by public auction. The actual number of shops now licensed is 15 in Lower Burma and 19 in Upper Burma.

Subject to the conditions of his license, a licensed vendor may sell by retail Government opium and poppy heads to any person in Lower Burma who is permitted to possess them, and Government or foreign opium or poppy heads to any non-Burman in Upper Burma.

At four places in Lower Burma, where the number of registered Burman and non-Burman consumers is considerable, but is not large enough to justify the existence of licensed shops, the duty of selling opium by retail to such consumers is imposed on certain Government officials, in addition to their ordinary duties as it would, it is thought, be impossible to prevent smuggling in of illicit opium and promiscuous sale if no means were provided for supplying such habitual consumers in a legal and recognised manner.

To prevent the illicit sale of opium by licensed or official vendors to persons not authorised to possess it, the maximum quantity of opium which a licensed vendor may possess, and in the four places in which opium is sold by Government agency, the maximum quantity which may be sold to consumers at each place in the whole year, is fixed by Government on a consideration of the number of persons legally entitled to possess opium living in the area served by the shop or Government agency, and of the probable amount of their requirements. The amount allowed for each consumer per diem is one quarter of a tola, viz., 45 grains. No minimum is fixed, and a licensed vendor may therefore possess and sell as little opium as he pleases, but he may not possess and sell more than the maximum quantity, as above determined by Government. All retail vendors licensed or official have to keep a daily account of sales, and to record therein the amounts sold to each purchaser.

Medical practitioners, pharmacists, and Native doctors, are also allowed to sell opium, poppy heads, and medical preparations of opium by retail. Medical practitioners are under no restriction as to the quantity of opium, &c. which they may possess and sell subject to the legal limit of possession by individuals, and are not required to take out licenses.

Pharmacists and Native doctors, however, must be licensed, and the quantities of opium, poppy heads and medical preparations which they may possess and sell are limited. In the case of pharmacists the limit is the same as that fixed for import by sea, viz., 10 sers of poppy heads, one ser of opium, and one ser of medical preparations, and in the case of doctors the limit is 10 sers of poppy heads, and 10 tolas of opium, or of medical preparations of opium.

Pharmacists, however, may be specially authorised to possess larger quantities at the discretion of the Financial Commissioner. Professional tattooers also may be licensed to possess and use for purpose of their profession any quantity of opium and medical preparations not exceeding 10 tolas in weight. Tattooing, it may be explained, is in Burma a recognised profession, and it is a universal custom to tattoo boys from the waist to the knees. The operation is painful, and opium is used to allay the pain. The number of professional tattooers in Burma at the census of 1891 was 4,280.

In Lower Burma, Native doctors and tattooers are, with the object of preventing illicit traffic in foreign opium, restricted to the use of the Government drug, but in Upper Burma they are permitted to use Shan or Chinese, as well as Government opium.

Any person contravening any one of the rules above summarised is liable on conviction before a magistrate, to be punished with imprisonment for a term which may extend to one year, or with fine which may extend to one thousand rupees, or with both.

Dalzell, Johnstone, and Dantra. All these officers support prohibition in the case of Burmans, except two of the doctors, who ventured no opinion on that question either way. It must be remembered also that these returns are the results of local inquiries made chiefly by Burman elders in the position of subordinate district officials, township officers, or village headmen. There is abundant evidence that this respectable class of Burmans regards the habit and its toleration by our Government with a peculiar aversion, based, no doubt, in part upon experience of the harm it does, but in part also, on a religious and sentimental regard for the old traditional Native law of prohibition. The forms to be filled in appear in no case to have provided columns for degrees of injury, and in many instances a man had to be returned either as not having suffered at all or as having been morally or physically wrecked.

234. As a fact, it is well known that in all countries where the opium habit prevails, sufferers from the effects of malarious fever, pulmonary complaints, syphilis, rheumatism, and other diseases are apt to take to opium, and to be more or less physical wrecks, apart from any effect of the drug; and there is evidence that though it is true that a Burman who takes to the habit loses his self-respect and the respect of his neighbours, and often descends to petty crime, yet it is also true that naturally vicious and disreputable people, who have no self-respect or respect of their neighbours to lose, commonly take to the habit for the pleasure they find in it. The opium habit, in fact, is in Burma as often a consequence of bad character, as bad character is a consequence of opium.

**The Commission's reasons for approving the experiment of prohibition to Burmans.**

235. But though the strong dislike of the habit which respectable Burmans evince is due to religious and national sentiment as well as to experience, yet the existence of such a sentiment was a matter which the Government of India was bound to take into consideration, and they would, in our opinion, have incurred a grave responsibility if they had refused to try the experiment of prohibition in the case of persons of Burmese race. There are other reasons for the exceptional treatment of Burma, which we think may be stated with advantage. We have already pointed out that in India both Hindus and Muhammadans generally regard the use of alcohol as disreputable, and more or less directly contrary to their religion. The Indian who takes to opium does not lose his self-respect or the respect of his neighbours in the same way as if he took to alcohol. The contrary is the case with the Burmans. Both opium and alcohol are prohibited by the Buddhist religion, but in practice the use of opium in Burma has been more strongly discountenanced than the use of alcohol. The use of liquor appears to have prevailed in the country before it became Buddhist, and is connected with the ceremonies of the old Pagan religion, many traces of which are found embedded in the popular form of Buddhism. 7532–35.

236. Again, the evidence before us certainly shows that the Burman who takes to opium is more often injured physically and morally than the Indian. This difference is generally attributed to a difference in mind or character. The Burman is more impulsive, pleasure loving, and reckless than the Indian. The latter has more stability of character, more industry, and much more thrift and prudence, inherited perhaps from a harder struggle for existence. These characteristics give the Indian more power of self-control than is possessed by the Burman. It may be noted that the evidence from the Straits Settlements shows a similar difference, in respect to the injurious effect of the opium habit between the Chinaman and the Malay. There seems no doubt that the Malays are more impulsive and excitable than the Chinese, and that the Burmans are much nearer in temperament to them than to the Chinese or Indians. V. 148.

237. The opium habit also is a very old custom of the population, or of certain castes or races in some parts of India, and the custom shows no signs of spreading to other tracts or other races, or of increase where it has hitherto prevailed. On the contrary, the evidence before us shows that from rise of price due to restrictive measures and change of fashion, the custom has in many cases been decreasing in the last 20 years, its place being often taken by alcohol. On the other hand, there is evidence to show that the use of opium by Burmans in Lower Burma has very considerably increased in the same period, in spite of regulations much more stringent than have been in force in India. The average annual sales of Excise opium in the five years ending 1870–71 amounted to 15,632 sers, and from the first regular census of Lower Burma, taken in 1872, which gave the population at 2,747,148, we may assume the average population of the quinquennial period to have been, say, something under 2,700,000. But in the five years ending 1890–91 the average annual sales rose to 51,725 sers, and the average

See Annual Excise Reports, Burma, for the years in question.

population of that period may be put at 4,500,000 as the census of 1892 gave it as 4,658,627. Whilst the population, therefore, has increased by 63 per cent., the consumption of opium has risen by 230 per cent. These figures may perhaps exaggerate the real increase in Burman consumption, for two reasons: first, because a considerable proportion of the increase of population consists of Chinese, Indian, and Shan immigrants, who are much more addicted to opium than the Burmans; and, secondly, because much foreign opium from Yunnan and the Shan States was formerly smuggled into Lower Burma. In recent years this opium has been successfully excluded by the efforts of revenue officers and licensed vendors, assisted by the preference of consumers for excise opium. But after making all necessary deductions on these accounts, a considerable increase in consumption by Burmans seems certain, and this conclusion is fully supported by the general opinion of Burmans and of English officials in Burma.

II. 6750.

238. In saying above that the opium habit in India was an old custom and not increasing, we were referring to opium-eating. In Burma, on the other hand, opium-smoking is the common habit which is on the increase. This habit is mainly a gregarious one, practised in public saloons or so-called clubs. We agree with Sir A. Mackenzie's remark, already quoted, to the effect that the temptations afforded by gregariousness in vice outweigh the restraint supposed to be exercised by public opinion. There is no good evidence that smoking is in itself more injurious physically than eating opium, but it appears to be a more seductive habit, and more ruinous to poor men, because more wasteful of time as well as of money.

239. For all these reasons we consider that there was a special case for trying the experiment of prohibition in the case of the Burmans. It seems to us to involve no political danger, as the traditions of the country and the sympathy of the great majority of the Burmans support the policy.* Moreover, when we annexed Upper Burma in 1886 we continued the prohibition of sale to, and possession of opium by, Burmans which we found existing, and, as Sir A. Mackenzie said at the end of his Minute of 30th April 1892, this was a crowning argument for extending the same prohibition to Lower Burma.

Remarks on manner of enforcement of the prohibition in case of Burmans.

8252.

240. The experiment must, however, be carefully watched. There is no doubt that there is some risk of injustice and oppression if these measures of prohibition are to be carried out against the actual consumer with the severity which has been advocated before us. We consider that such severity may be justifiable in the case of persons convicted of making a trade of breach of the law, such as professional smugglers, unlicensed vendors, or vendors—official or medical—selling illicitly; but we are of opinion that it would be dangerous and demoralising to apply it to the case of persons who are convicted of mere illicit possession of small quantities of the drug intended for their own personal use. We would refer to the evidence of Mr. Smeaton as to the risk of corruption and oppression which would be likely to follow the free use of the police and informers, and as to the evils of any tyrannical suppression of the drug. Major Grey's remarks show how near we have already gone to that point in Arakan under the old system. It is to be hoped that the moral effect of the prohibition will increase the zeal of the priests and elders, and that their influence, coupled with the risk and difficulties of illicitly obtaining the drug, will prevent any large number of new Burman recruits to the habit.

8079 and 8256.

II. p. 548. App. L.

*Treatment of Non-Burmans under present System, and Views of the Commission on this Subject.*

The exemption of certain races in Burma from prohibition.

The Indians in Burma.

241. We pass now to the consideration of the exemption of certain races in Burma from the prohibitive rules of the new system, the point to which the inquiry made in Burma was specially directed. They consist of the Indians and Chinese, who are true foreigners or non-Burmans, and of certain indigenous tribes who have been treated as non-Burmans in the new regulations. The Indians, of whom there are upwards of 200,000 in the country, may be grouped as Panjabis and Hindustanis, Bengalis and Chittagonians, and Madrasis. In respect of these, the evidence taken in Burma accords generally with the evidence taken by the Commission in India, and does not contain much that is either new or material. The Sikhs of the Burma Military Police are said to eat opium extensively, especially when employed in active service under unfavourable climatic conditions, and exposed to malarial influence; and the Deputy

II. 8184, 8187.

* There is reason to believe that opium is used in certain districts as a prophylactic against malaria, and the suggestion has been made that in such cases the general rules should be somewhat relaxed.

Inspector-General, is of opinion that it would be necessary to exempt from any order of prohibition that might be enforced. This evidence corroborates that taken in other places, as to the value attached by natives of the Punjab, especially Sikhs, to opium as a stimulant in times of severe bodily fatigue and exposure. The evidence as to Madrasis in Burma is more important. The use of opium among the Madrasi coolies in Burma, known as Coringhies, who come mainly from the four northern districts of the Madras Presidency, is said by witnesses, such as Mr. Findlay, the manager of one of the rice mills of Messrs. Bullock Brothers, and M. Madooray Pillay, a leading contractor, and a Municipal Commissioner, and honorary magistrate in Rangoon, to be exceedingly common. The opium is eaten as in India, in a crude form in pills, and is said to be taken as a stimulant to lessen the fatigue caused by their daily work, and to have no apparent effect upon the physical energies, or upon the moral character. Immoderate use is said to be rare. There is, in short, no evidence before us that Indians in Burma are being injured by opium.

6832. 6857. Cf. para. 237. above. 6743–4, 6905, 7190, 7228.

242. We now come to the Chinese, of whom there are about 40,000 in Burma. There is a remarkable unanimity of opinion throughout the correspondence which has taken place regarding the opium question in Burma, a unanimity as remarkable as that which exists in regard to the injury caused to Burmans by opium, that the drug is commonly used by Chinamen in Burma, and does them little harm, while it is sometimes even beneficial. The opinions of Sir Ashley Eden, Sir Charles Aitchison, and Sir Alexander Mackenzie, have already been referred to. It may be observed that the evidence from China shows that opium wrecks are found there among the poor labouring class whose work involves severe physical exertion much oftener than among merchants, shopkeepers, or artisans, to which classes the Chinese in Burma mainly belong. The number of opium consumers among them was variously estimated by witnesses who appeared before us at from five to forty per cent., and one or two witnesses stated that almost all Chinamen in Burma smoked opium habitually or occasionally. The general tenor of the evidence showed that the habit is exceedingly common. As to its effects, seven Chinamen, themselves opium consumers, gave evidence at Rangoon. Of these four were merchants, two shopkeepers, and one a doctor. The more excessive consumers, who smoked from two to three ounces of opium a day, were wizened, emaciated old men, but intelligent. They admitted that excess weakened a man physically, but argued that it rather cleared and brightened the intellect, and by stimulating the imagination and calming the temper made a man clever in business. The same idea will be found expressed in some of the evidence from China. The moderate smokers said they took it to relieve weakness or disease. It was admitted that poor men who starved themselves to get opium were injured, but it was denied that the drug in itself had any demoralising effect. It was also stated that it would be a harsh measure to prevent the Chinese in Burma from getting opium, and that many would go back to China if that were done. Mr. Weidemann, a district officer of long experience, who has at different times expressed strong views in favour of the prohibition of the use of opium by Burmans, stated that the best Chinamen in Burma avoided the habit, but that in his opinion opium used in moderation had no bad effect upon Chinamen physically or morally, though immoderate consumption unfitted a man for steady application to business and often led him into bad habits. Mr. Bridges, the Commissioner of the eastern division of Upper Burma, also an officer of much district experience, gave similar evidence as to the generally moderate and innocuous nature of the habit among Chinamen; and Mr. Warry, the Adviser on Chinese affairs to the Local Administration, in his statement submitted to the Commission, says that he has never noticed any ill result from opium as ordinarily used by Chinamen in Burma, and that though opium occasionally makes a consumer lazy and disinclined to rise early in the morning, he cannot call to mind more than two or three cases in which it has been taken in excess with injurious results to the constitution of the consumer. This officer has had special opportunities of closely observing the Chinese, and was, at the time of our inquiry, absent in Yunnan.

The Chinese in Burma. 7108, 7141, 7541, 7601. II. pp. 200-2. 7133, 7596. 6736. 7541. II. p. 536.

243. Two selected representatives of the Chinese community, numbering 500 or 600, at the frontier town of Bhamo in Upper Burma, were both smokers of opium, and one of them said that opium was generally considered to be a prophylactic against fever. Both gentlemen were agreed that the prohibition of the use of opium by Chinamen in Burma might affect the trade between Burma and China. On the other hand, the habit was condemned by two respectable Chinamen examined at Rangoon, who were non-smokers; and at Mandalay, a Chinese Municipal Commissioner, also a non-smoker, stated that opium was largely smoked by the Cantonese and Fokienese Chinamen in the town, but that it was a bad habit, and was contrary to the traditional precepts of

II. pp. 216–7. II. pp. 198, 199, 208, 209.

II. pp. 214, 216. his countrymen. A respectable Panthé, or Yunannese Mahomedan, merchant, also said that the Mahomedans of his country thought the habit opposed to the precepts of the Koran, and that it was injurious to persons who were insufficiently nourished, and that some slight loss of reputation attached to the habit.

II. pp. 525, 526. 244. Two memorials, one from Rangoon, signed by 305 Chinamen, and one from Maulmain, signed by 286 Chinamen, were presented to the Commission, asking for the entire suppression of the opium traffic. The Rangoon memorial was drafted and circulated for signature by Mr. Leong Shian Tuck, a Chinaman who had lived all his life in Burma, and had received a good English education. The signatures to the two memorials indicate that among Chinamen in Burma, as elsewhere, there is a very considerable party in favour of total abstinence from opium. The habit is no doubt usually condemned by non-smokers, and sometimes by smokers. On the other hand there is evidence to show that among Chinamen in Burma the opium-smoker is not socially ostracised, and that even the confirmed habit does not in itself entail any loss of position or serious loss of character. The Chinamen in Burma seem to be a notably active and flourishing community, and we do not find it proved that the use of opium is doing them any serious harm.

V. pp. 345, 346. II. 7399–402, 8346. 6733, 7028. 7050, 7254. 7415, 7417.

**Shans, Palaungs, and Kachins in Burma proper and in the Shan States.**

245. We come now to the case of the indigenous tribes who have been treated as non-Burmans in the new regulations. The territories to the west and north-west, known as the Burma Shan States, and part of the territory to the north occupied by the Kachins are inhabited by tribes covered by the three names Shan, Palaung, and Kachin. In the eastern parts there are also to be found intermingled with them many small settlements of Chinese or Chinese Shans. Great numbers of these people have emigrated from the Shan States and settled in our districts, particularly in Lower Burmah. By the definition of a Burman, given in the new regulations, Shans, Palaungs, and Kachins are, like Indians or Chinese, classed as non-Burmans, and are subject only to the restrictive part of the system and not to the prohibitory rules.

246. There is some difficulty in describing the evidence put before the Commission as to the Shans, Palaungs, and Kachins, as most of the witnesses who spoke or wrote about them, referred sometimes to those resident in the semi-independent Shan States, and sometimes to those in British districts. But this is not of importance, as the evidence shows that a general resemblance exists in the habits of these people wherever they reside. The Rev. Dr. Cushing's evidence, as to the Shans in Lower Burma, shows that the opium habit is very common among them, but is disapproved by the respectable men who are Buddhists by religion, and that it is generally, therefore, more or less concealed. Mr. Bridges also speaks of the consumption of opium by the Shan Danus or Burmanized Shans, on the borders of Upper Burma, and also in the Shan States. Evidence as to the Kachins in the northern district of Upper Burma shows that almost all the men and many of the women, smoke opium. As to the Shan States, Mr. Scott, who is a very high authority, shows that in a belt on and near the border of the British districts, where the Buddhist religion and Burman influence have long been strong, the habit, though common, is regarded as criminal, and the practice is more or less secret: in the next belt to the east, the habit is common and more openly practised, though it is still regarded by respectable and religious people as a vice: in the furthermost belt, beyond the Salwin River, the habit is almost universal, and practised without shame or reproach, except in the case of excess. Though this variation according to belts is generally true, yet Mr. Scott says that the Kachins and Palaungs, wherever found are, as a rule, habitual smokers and not ashamed of it. The Rev. Dr. Cushing's evidence as to prevalence of the habit in the Shan States, confirms that of Mr. Scott.

6939, 6962, 6964. 7528–9, 7547. II. pp. 523–4. 6923, 6928, 6932.

247. As to the origin of the habit of smoking opium in Upper Burma, the evidence seems to show that it came into the Shan States from Yunnan, on the north-east, and has gradually spread to the south. The Sawbwa of Thibaw estimated the age of the habit in the Shan States at 200 or 300 years, and the ex-Sawbwa of Nyoungwé at from 30 to 100 years, and Mong Aung Min who had to deal with Kachins, Shans, and other hill tribes as a high officer of the King of Burmah at the jade mines and elsewhere, said that the people told him that the custom had always existed among them. The distribution of the habit confirms these traditions, and shows that it is an old custom, is old to the north and east, and comparatively modern in the southern Shan States. We know from evidence from China that the habit of smoking opium became prevalent in south-west China many years ago, and that soon after there was a great extension of poppy cultivation in western China, which includes Yunnan.

7317, 7878, 7976.

**Cultivation of the poppy**

248. In some of the northern Shan States the cultivation of the poppy is common, and to the east of the Salwin it is in many places the principal agricultural industry.

The opium produced is exported to the other Shan States and Upper Burma, and also to Siam and Chinese territory. In the southern Shan States the cultivation is limited, being confined to small patches in gardens, or to out of the way places in hill ranges, and the yield is not sufficient for local consumption. The poppy is also cultivated extensively in Kachin villages. From the evidence of Mr. Scott and other witnesses, it appears that where the cultivation is most extensive the use of opium is most general, but there are some exceptions to this rule. For example, the Lawas are said to grow poppy largely, but to be deterred by a tribal custom from consuming the produce themselves.

among the Shans and Kachins, and prevalent methods of consuming opium.

6923, 7307, 7861 and 7895–7. II. p. 523–4.

249. As to the method of consumption, the evidence shows that opium is usually smoked by Shans, Palaungs, and Kachins, but Mr. Scott mentions one tribe, the Was, who are great consumers, but make it a rule to take the drug in pills. The Shans and Palaungs generally appear to smoke *chandu*, after the Chinese fashion: the Kachins on the contrary, always smoke leaves soaked in opium prepared in a manner similar to what is called *madak* in India.

6924. 7861, 7315. II. p. 524.

250. As to the effect of the opium habit on Shans, Palaungs, and Kachins, the Rev. Dr. Cushing considered it always a bad habit, and estimated that from 17 to 20 per cent. of consumers eventually indulged to excess and became enervated in mind and body, unable to do any work except under the stimulus of the drug. This evidence referred principally to the Shans settled in Lower Burma, whom he was able to watch as he lived permanently among them. The Chief or Sawbwa of the Thibaw State, and an ex-Sawbwa and a Minister of other States, speaking of the Shans said that the habit often became immoderate, and was then injurious to health, leading to indolence, weakness, and shortened life. The two last witnesses said, however, that they had not perceived any evil effects upon the Kachins. A Burmese gentleman who was in charge of the jade mines under the King's Government, and Dr. Kirkpatrick, an American Baptist medical missionary among the Shans, pronounced the effects to be decidedly injurious. On the other hand, Mr. Bridges and other witnesses, speaking of Shans, Chinese Shans, and Kachins, were unable to perceive any evil effect, moral or physical, in the habit as ordinarily practised. Mr. Bagley, the engineer-in-chief of the Mandalay and Kunlon Railway, and Mr. Guiness, the executive engineer of the Mu Valley line, gave remarkable evidence as to the great energy and activity of Shan and Chinese Shan coolies drawn from the parts of the Shan States where the opium habit is most prevalent. These men earned double the wages of Burman coolies, and did not seem injured by the habit though they could not or would not work without opium. Lastly, the statements submitted by Mr. Scott and Mr. Hildebrand are worthy of special attention. "The only Shans," writes Mr. Scott, "who are harmfully affected by the "consumption of opium, whether by smoking or swallowing it, are those who take it "to excess, and these are usually men of the ruling or official class and therefore the "most prominent. Among the great mass of the people I have seen no evil effects. "The greatest opium-smokers are those who grow the poppy themselves, and the "labour which this cultivation implies in the hills of the Shan States is sufficient "guarantee that the farmers are no worn out debauchees. The people are naturally "shrewd and the amount of opium they consume has no perceptible effect upon their "natural abilities." He goes on to say that, so far from being a curse, he believes opium to be a real boon to the hillmen, and he concludes by saying, "to deprive the "Shan and the hillman of opium would be to put him to death. To forbid him to "grow the poppy would be to court defiance and revolt."

Effects of opium consumption on Shans and Kachins.

6947, 6957, 6960.

7316, 7319.

7863, 7905.

7872, 7904.

7791–2, 7979.

7547.

7916, 7919. 7951, 7952.

II. pp. 523 and 524.

251. Mr. Hildebrand's testimony is equally strong, and his opinions are the more remarkable as he has been a consistent advocate of a prohibitive policy to Burmans. "On the east of the Salwin," he writes, "where opium smoking in some tracts is "universal to whole village communities, male and female, I could not fail to note "that there was practically no difference in the general appearance of the population "and of their habits with reference to industry or to their fondness of and care of "their children. If there was any difference observable between these village com-"munities and village communities in the same condition of life and habit on the "west of the Salwin (with the exception of the use of opium), for robustness and "cheerfulness the balance would be in favour of the habitual opium consuming "community." From the whole of the evidence as regards Shans, Palaungs, and Kachins, we come to the conclusion that though among some of these tribes the habit is almost universal and among all common, yet moderation is commonly practised and serious injury is rare. On the other hand with reference to the climate and conditions of life of these races there seems reason to believe that the habit has in a large proportion of cases a beneficial side.

II. p. 524.

Consideration of the arguments against the exclusion from prohibition of certain races in Burma, and the Commission's reasons for not accepting them. II. p. 488.

252. We have described at considerable length the evidence put before us in Burma as to the opium habit among the races which are excluded from the prohibitive provisions of the new regulations, *i.e.*, the Indians, the Chinese, and the tribes covered by the names of Shan, Palaung, and Kachin. It has been argued that these exclusions are a mistake, for two reasons, first, because in the case of the excluded races prohibition is equally necessary for their benefit and equally justifiable and practicable; and secondly, because the exclusions will make the system of prohibition in the case of the Burmans a practical failure.

253. As to the first argument we have come to the conclusion from the evidence that there is a marked distinction, wider, no doubt, in some cases than in others, between the case of the Burmans and that of the races excluded as non-Burmans, and that it is not necessary or advisable at present to impose prohibition upon the latter for their own protection. As to the second argument, it was asserted by those who used it that there was practical experience that the system which has prevailed in Upper Burma since annexation had altogether failed as a measure of prohibition to Burmans. In the first place the new regulation is stronger than the system at first in force in Upper Burma. Possession of opium by Burmans as well as its sale to them has been made punishable, and in future limited quantities only will be issued to licensed vendors, based on estimates of the number of lawful consumers; and in the second place it was clearly proved that the Upper Burma system had not been inoperative as regards Burmans. 7585, 7589, 8386. Mr. Bridges stated in his evidence before the Commission that it had been effectual, except where there are a number of Chinese, and Mr. Fryer, the Officiating Chief Commissioner, expressed his opinion that the rules had much restricted the use of opium by Burmans. A Chinese Municipal Commissioner of Mandalay, who condemned 7612. the use of opium, said that the Burmans in Upper Burma have been forced by the system to use less opium than they did in King Mindon Min's time, and Mr. Warry, II. 536. the Adviser on China affairs, shows how dear and how difficult to obtain opium has been found, even by the Chinese, in Upper Burma.

254. Even Mr. Smeaton, upon whose view, as expressed in the Provincial Excise Report for the year 1890–91, the assertion of failure was mainly based, stated in his evidence before us that he is now of opinion that the law had been on the whole successfully enforced, and that indulgence in the habit had increased to a very small 8284. extent indeed in Upper Burma. This is the opinion expressed, with practical unanimity, II. App. L. by the District Officers and Commissioners of Upper Burma in their latest reports, and many go further and claim that the system has been successful, and that with the new improvements it will be capable of being fully enforced. In our judgment, therefore, the second argument also fails. Our final conclusion is that no sufficient grounds have been shown for the extension of prohibitive measures to any race outside those classed in the new regulations as Burmans.

255. We think it advisable to give here a summary of the reasons which, in our opinion, justify this conclusion:—

(1.) The opium habit is, generally speaking, much commoner among the people of those races found in our districts than among the other indigenous races classed as Burmans, and it causes comparatively little or no injury in health, morals, or reputation to the great majority of consumers.

(2.) It is not thought desirable to impose on those races in our districts a law in respect to opium, so entirely different from the custom and practice which prevail among their brethren of the same races in the adjacent semi-independent territories. The violence of the contrast might raise discontent, might drive some away and prevent others coming in, and might injure our influence over the semi-independent country.

(3.) The exception is in accordance with the treatment of these races by the Kings of Burma, for they were practically free from the old Native rule or law of prohibition.

(4.) It is opposed to the general policy of British legislation, not only in India, but at home, to treat the mere personal indulgence in opium, or any other stimulant, as a crime; and it is not right or expedient so to interfere with the personal liberty of any race, except on strong evidence of widespread injury, and of the active sympathy of the majority of the people of such race in such legislation.

256. We have no suggestions to make in detail as to the administration of the measures sanctioned by the Government of India in November 1893, and we recommend that they be maintained unaltered till they are fairly tested by experience.

## SECTION IX.

### General Conclusions.

257. In summing up the general results of our inquiry, we may first consider the arguments by which support has been obtained for the anti-opium movement. It has been widely held that opium is essentially a poison, used only for vicious and baneful indulgence. Judgment on such a question must mainly turn on medical evidence; and it was abundantly provided for the guidance of your Commission.

General purport of medical evidence.

258. Dealing first with the medical witnesses in the service of Government their testimony was practically unanimous. To the unscientific, the effect of that testimony may perhaps be most clearly conveyed by saying that the temperate use of opium in India should be viewed in the same light as the temperate use of alcohol in England. Opium is harmful, harmless, or even beneficial, according to the measure and discretion with which it is used.

259. Opium is used as a stimulant, and it is also largely consumed in India for the mitigation of suffering and the prevention or cure of disease. It is the universal household remedy. It is extensively administered to infants, and the practice does not appear to any appreciable extent injurious. The use of opium does not cause insanity. It does not prejudicially affect the birth-rate, which in India averages 42 per thousand, as against 31·4 per thousand for the United Kingdom. It does not appear responsible for any disease peculiar to itself. An Insurance Society at Bombay, after twenty years' experience, has not found it necessary to impose an extra premium on the lives of moderate opium-eaters.

260. In addition to the evidence tendered by medical witnesses in the service of the Government, we had the testimony in the same sense of medical men in private practice, and of medical missionaries, such as Dr. Clark and Dr. Newton. The medical witnesses who advocated prohibition were few; and all of them were equally if not more opposed to the use of alcohol than to that of opium.

261. In connexion with the medical aspect of the case, it is important to mention that prohibition of the use of opium, except for medical purposes, even if desirable, could not practically be enforced. The medical and quasi-medical uses of the drug are so intermixed that it is impossible to draw a definite line between them. Among large masses of the people there is a strong prejudice against the European system of medicine. Not 10 per cent. ever consult a practitioner on the European system, and a large proportion of the native population never in their lives see a medical man of any school.

Missionary evidence advocating prohibition.

262. Turning to the missionary evidence in support of prohibition, we may observe that more than half the witnesses were members of the American Methodist Episcopal and Canadian Presbyterian Communions. Their views were shared by representatives of the Presbyterian and Baptist missions, and the London Missionary Society. These devoted men are without doubt most sincere in their belief in the mischief caused by opium. When, however, we are urged to recommend that the paramount authority of the British Parliament should be brought to bear on the Government of India for the prohibition of the production and use of opium, and the extinction of an export trade which was in existence before British rule in India, it is our duty to weigh most carefully the evidence by which such proposals are supported. We are bound to take notice of the circumstance that most of the missionary witnesses were total abstainers, and some were ardent workers in the cause.

Missionary evidence not advocating prohibition.

263. We turn to the testimony on the other side. The views of the Bishops and clergy of Calcutta and Lucknow, and of the Roman Catholic Archbishop of Calcutta, have been already set forth. They were opposed to prohibition. We may also invite special attention to the testimony of Mr. James Monro, C.B., formerly commissioner in Bengal, subsequently Chief Commissioner of Police in London, who has now returned to India for missionary work. He had never heard it suggested that the opium trade and the Government connexion with it formed any obstacle to Christian work.

Disposition of the people of India as to prohibition.

264. In a matter closely affecting the habits and customs of the people, it would be obviously inexpedient to make sweeping changes without some indication of popular approval. We are satisfied that if any desire for the suppression of the use of opium

had existed in India, on the part of any large section of the population, it would have made itself felt during the lengthened tour of the Commission. The witnesses who advocated prohibition were few; and fewer still were those who could claim to be men of weight and authority, and in any sense representative. Many belonged to the Bengali sect of the Brahmo Somaj, which numbers about 3,000 adherents, the pledge of total abstinence being a condition of membership. Of the native witnesses adverse to opium, it may be stated that nearly all were total abstainers. Many questions were put by our native colleague, Mr. Haridas Veharidas, with the view of eliciting Native opinions as to the relative influence of opium and alcohol, and as to the religious obligation to observe rules of abstinence. In reply, the witnesses generally admitted that the spread of drinking was the more serious evil, and that, while their religion expressly prohibited alcohol, there was no direct prohibition of the use of opium.

Political associations silent.

265. The National Congress, consisting of delegates from every part of India, has never been slow to criticise the Government. It has made strong declarations against alcohol. It has been silent with reference to opium.

Native opinion must be distinctly in favour of the change.

266. Upon every consideration of prudence and statesmanship, it seems clear that in the position of the British Government in India, we cannot deal experimentally with 290 millions of people, in a matter involving interference with the innermost concerns of personal life, without a clear pronouncement of Native opinion in favour of such a step.

Financial consideration.

267. It is not necessary to repeat the figures and the arguments given elsewhere on the financial aspect of the case. In the present circumstances the revenue derived from opium is indispensable for carrying on with efficiency the Government of India. Every native witness who advocated the suppression of the opium traffic admitted that if, as a consequence of such a step, taxation in some new form must be imposed, popular opinion would be opposed to any change.

The China question.

268. In dealing with China, we have not thought it necessary to present a detailed report. China was not directly included in your Majesty's Order of Reference; but we considered it desirable to give some attention to this side of the question. The evidence we have obtained as to the effects of the use of opium in China has been of a conflicting character. In this matter, responsibility mainly lies with the Chinese Government. It is for them to take the first step in any modification of the present Treaty arrangements. Upon the general question, the position which Great Britain may properly take up is clearly put by Mr. O'Conor, Your Majesty's representative at Peking, in his covering letter addressed to Your Commission. He says:—

> "If the use of the drug in China depended on the supply received from India, it might be a practical question what measures could, or ought to, be taken to discourage its importation. But this is not the issue. The quantity of opium grown in China is increasing enormously. Even the nominal prohibition of the cultivation of the poppy no longer exists throughout the whole Empire, and were the importation of Indian opium to be stopped, China would in a few years so increase her production, as not only to supply her own wants, but probably to export opium to foreign countries."

The evil less than it has been represented in England.

269. As the result of a searching inquiry, and upon a deliberate review of the copious evidence submitted to us, we feel bound to express our conviction that the movement in England in favour of active interference on the part of the Imperial Parliament for the suppression of the opium habit in India, has proceeded from an exaggerated impression as to the nature and extent of the evil to be controlled. The gloomy descriptions presented to British audiences of extensive moral and physical degradation by opium, have not been accepted by the witnesses representing the people of India, nor by those most responsible for the government of the country.

Present regulations are of restrictive tendency.

270. We may be sensible that, as in the case of the drink duties at home, so in the analogous case of opium in India, the revenue is drawn from a source liable to abuse. Looking, however, at the problem before us from the highest moral standpoint, it is something to know that the hand of the ruler is chiefly felt in the way of repression and restriction.

Sufficiency of evidence produced.

271. We have already expressed our opinion with reference to the character and sufficiency of the evidence on which the conclusions to which we have been brought depend. We are satisfied that the examination of more than 700 witnesses afforded to the Commission ample opportunity of learning all the essential facts, as to the effects of the use of opium in India, and the feelings of the Native population with reference to a policy of prohibition.

Opium in Burma.

272. The conclusions of the Commission as to Burma have been fully stated in the Section of our Report dealing with that Province. The Burmans are specially susceptible to injury from opium, and there is among them a popular sentiment against the habit. Special regulations have, therefore, been introduced which, short of universal prohibition, seem to us as restrictive as it would be expedient for any Government to attempt to enforce.

The draft conclusions recorded at the close of the public inquiry.

273. It only remains for us to give specific answers to the questions referred to us by Your Majesty as arranged in the Order of Reference. We cannot do this better than by reproducing the conclusions at which we unanimously arrived at the final meeting of the Commission at Bombay. To our regret, our colleague, Mr. Wilson, was prevented by illness from attending our deliberations. Every other member of the Commission, including our Native colleagues, was present. With the impression of our recent tour fresh in our minds, after a full discussion, but with no dissenting voice on the broader issues, we adopted the following resolutions:—

I.—Whether the growth of the poppy and the manufacture and sale of opium in British India should be prohibited except for medical purposes, and whether this prohibition could be extended to the Native States?

Prohibition except for medical purposes.

I.—(*a.*) It has not been shown to be necessary, or to be demanded by the people, that the growth of the poppy and manufacture and sale of opium in British India should be prohibited except for medical purposes. A considerable minority, consisting of people opposed on principle to all stimulants, would support prohibition except for medical purposes, if relieved from anxiety as to the financial results, and as to the punitive and inquisitorial measures which repression would involve. The number who desire prohibition at all risks is exceedingly small.

Extension of prohibition to the Protected States.

(*b.*) The authoritative extension of such prohibition to the Native States would be an interference on the part of the Paramount Power, for which we can find no precedent and no justification, and which would be resented by the Chiefs and their people. The growth of the poppy and the manufacture of opium have been prohibited in some Native States by orders passed by the Chiefs in accordance with Treaties or Agreements made with the Government of India; but such Treaties or Agreements rest upon an arrangement whereby a full and cheap supply of opium is secured for the internal consumption of these States and for the realisation by the Chiefs of an Excise Revenue from their people, and the Chiefs would cease to be bound by them if the supply were cut off or restricted.

Discontinuance of the Bengal export trade.

(*c*) The prohibition of the growth of the poppy and the manufacture and sale of opium in British India, except for medical purposes, involves the destruction of the export trade in Bengal opium from Calcutta to China and elsewhere, which would inflict a very heavy loss of public revenue on the Government and people of India. The existing Treaties, by which the import of Indian opium to China is permitted and regulated, have been deliberately accepted by the Chinese Government, and have been formally admitted by the Chinese Ministers on the last occasion of revision to contain all that they desire. In the natural order of things, it is for the Chinese Government to move first if it wishes to sacrifice the revenue which it derives and to annul the Treaty provisions legalising import on the ground that such an import is injurious to China. Whether the British Government bears part of the cost or not, it would not be right or fair to the people of British India for the British

Government to destroy, unasked by China, the Bengal opium trade; at any rate, it would not be right or fair for it to so act, unless there was convincing proof (1) that the trade stands on a different plane from the alcohol and is more pernicious and demoralising; (2) that its destruction would, in all probability, materially benefit China in a permanent way; and (3) that the Chinese Government is prevented from itself moving by fear of hostile action on our part. From the evidence before us, we do not think it proved that these reasons for unsolicited action by the British Government exist, and we agree in not recommending any action tending to the destruction of the trade. If at any future time the Chinese Government declares a wish to prohibit import, the question will be changed and we (the Commission) shall hold ourselves at liberty to reconsider it.

Extinction of the Malwa export trade.

II.—The nature of the existing arrangements with the Native States in respect of the transit of opium through British territory, and on what terms, if any, these arrangements could be with justice terminated.

II.—Existing arrangements with certain opium-producing Native States in respect of the transit of opium through British territory for the Bombay export trade are not, except in the case of Baroda, in the nature of Agreements, though in virtue of long established practice they may be held, perhaps, to have the force of Agreements. They consist of the prohibition of transit, except under a pass granted by a British officer, on payment of an Imperial transit duty. These arrangements rest in origin upon the power of regulation and taxation which the British Government has in consequence of these States being cut off from the sea by intervening British territory. The privilege of the transit of opium for export beyond the sea from Bombay on payment of a duty could not now be terminated with justice except by voluntary agreement, which, if obtained at all, would involve large pecuniary compensation, both to the State and private individuals, and also a heavy loss of public revenue to the Government of India.

Financial considerations.

III.—The effect on the finances of India of the prohibition of the sale and export of opium, taking into consideration (*a*) the compensation payable, (*b*) the cost of the necessary preventive measures, (*c*) the loss of revenue.

III.—The finances of India are not in a condition to bear the charges for compensation, the cost of the necessary preventive measures, and the loss of revenues would result from the adoption of a policy of prohibition.

Changes in system short of prohibition.

IV.—Whether any change short of total prohibition should be made in the system at present followed for regulating and restricting the opium traffic, and for raising a revenue therefrom.

IV.—(*a.*) The regulations for the restriction of the consumption of opium may be amended in various particulars. We are not prepared to make recommendations without careful study of details.

(*b.*) The Bengal monopoly seems to us the best system for regulating the production of opium in British India. Certain administrative reforms were recommended by the Commission of 1883.

(*c.*) We are not prepared at present to recommend any further development of the new regulations recently introduced into Burma. The operations of these new rules, which only came into force on January 1st, 1894, should be carefully watched before any further changes are introduced.

V.—The consumption of opium by the different races and in the different districts in India, and the effect of such consumption on the moral and physical condition of the people?

V.—(*a.*) We have made exhaustive inquiry into the consumption of opium in India and its effects. We find no evidence of extensive moral or physical degradation from its use. Consumption of opium in India and its effects.

(*b.*) Opium is extensively used for non-medical and quasi-medical purposes, in some cases with benefit, and for the most part without injurious consequences. The non-medical uses are so interwoven with the medical uses that it would not be practicable to draw a distinction between them in the distribution and sale of the drug.

(*c.*) The habitual use of opium as a stimulant by young people is generally condemned.

(*d.*) Opium-smoking is little practised in India; it is considered a disreputable habit.

(*e.*) The whole question of the effects of opium as medically considered must be worked out later in detail upon a careful collation of the large mass of evidence before the Commission.

VI.—The disposition of the people of India in regard to (*a*) the use of opium for non-medical purposes, and (*b*) their willingness to bear, in whole or in part, the cost of prohibitive measures.

VI.—The testimony laid before us has been unanimous that the people of India would be unwilling to bear the cost of prohibitive measures. Disposition of the people of India.

274. We desire to make a special reference to the Report which we understand to be in preparation by our colleague Mr. Wilson. The criticisms or suggestions which it may contain have not been submitted for our consideration. We regret that in the discussions which took place during the preparation of our Report we were not placed in possession of the views of our colleague.* Dissent from the general conclusions.

275. In conclusion, we desire to express our high appreciation of the services rendered by our Secretaries. Mr. Hewett met us on our arrival at Calcutta, and accompanied us throughout our tour in India. His duties were of a special and exceptional character, and were most efficiently performed. On our return to England Mr. Hewett began the drafting of our Report. On his departure for India, to take up an important appointment, the work was entrusted to Mr. Baines, to whom we are much indebted for the ability, patience, and knowledge of India which he has displayed in the execution of his task. Services of the Secretaries.

All which we humbly submit for Your Majesty's most gracious consideration.

(Signed) BRASSEY (*Chairman*).
J. B. LYALL.
LAKSHMESHWAR SINGH, of DARBHANGA.†
W. ROBERTS.
R. G. C. MOWBRAY.
A. U. FANSHAWE.
A. PEASE.
HARIDAS VEHARIDAS.†

J. A. BAINES (*Secretary*).

London, 16th April 1895.

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* The Maharaja of Durbhanga and Mr. Haridas Veharidas, not having been present during the preparation of the Report, are not to be held to have affixed their signatures to the 274th paragraph.

† Subject to the qualifying remarks contained in the separate Memorandum appended.

# ANNEXURES.

## MEMORANDUM I.;

## ON THE GENERAL FEATURES AND THE MEDICAL ASPECTS OF THE OPIUM HABIT IN INDIA;

By Sir WILLIAM ROBERTS, M.D., F.R.S.

It seemed advisable for several reasons that the large mass of new and interesting information, gathered by the Opium Commission during their tour in India, on the general features and the medical aspects of the opium habit in that country, should be analysed and digested somewhat more fully than was possible to do in the body of their official Report. This task naturally fell to my share, as the only medical member of the Commission.

The matters requiring examination are considered under the following headings:—(1.) The non-medical use of opium, or the opium habit proper. (2.) Opium as a household remedy. (3.) Opium as a prophylactic against malaria. (4.) The custom of giving opium to infants. (5.) The use of opium on occasions of ceremony. (6.) Opium smoking in India.

The consumption by all human communities, except the most primitive, of one or more articles of a stimulating and restorative character—such as alcohol, tobacco, opium, tea, coffee, coca, Indian hemp, betel, and others—constitutes a remarkable feature in the natural history of man. A practice so widespread and general must correspond to some profound instinct of human nature. These articles do not possess, in their essence, nutritive properties, and they are not classed as true articles of food, though some of them are largely used with the daily meals. Numerous individuals, and even considerable classes, forego their use, either wholly or in part. These substances cannot therefore be regarded as necessaries of man's animal life. And the inference would seem to be that their use is connected in some subtle way, with the play of those faculties and feelings which are peculiar to man as a social and self-conscious creature.

Whatever collateral use, dietetic or other, the substances in question may have, it is certain, that the essential purpose for which they are taken is to modify, in a favourable* sense, the action of the nervous system. And although this modification varies, both in kind and degree, with each particular article, it is nevertheless true that all of them, when legitimately used, produce a certain community of effect on the user. This common effect, in its broadest and most general experience, may be described as an enhanced sense of well-being, or "euphoria." On the ground of this common action these substances may be conveniently united together into one natural group of (non-nutrient) physiological agents, and designated "euphoric" agents.†

### (1.) The Opium Habit in India.

Opium was first introduced into the East, no doubt, as a medicine; and its use as a stimulant and restorative was engrafted upon and grew out of the medicinal use. And it is still probably true, as regards India, that the larger part of the opium consumed in that country is used for the mitigation of suffering and the prevention and cure of disease. These two uses of opium—the medicinal and non-medicinal (or euphoric)—although in principle distinct, are in practice often so merged together and interfused as to be indistinguishable. This composite character of the opium habit is a constant source of confusion with incautious observers, and effects are attributed to opium which are really due to concomitant disease. In what follows it must be understood that in speaking of the opium habit in India the practice of eating or drinking opium is always meant, and not the practice of smoking opium, which is separately dealt with.

Among the substances employed by mankind as exhilarants and restoratives, opium takes a position intermediate between alcohol and tobacco, and it may be compared and

* That is, "favourable" as judged by the sensations of the user.

† The words euphoria and euphoric are not new. Euphoria is an old medical term, signifying "feeling "perfectly well and able to bear pain and anxiety easily." These words are again creeping into use both here and on the Continent. Levinstein employs the word euphoria in his work on the morphia habit (*Morphiumsucht*, p. 6.), and the adjective euphoric (*euphorische* wirkung) is used by Erlenmeyer in his treatise on the opium habit (*Opiumsucht u. Ihre Behandlung*, 3rd ed. p. 11). Some such words are much wanted. Their adoption would save circumlocution, and give greater precision to language in speaking of the primary and common effect of alcohol, opium, tobacco, tea and coffee, and their congeners.

contrasted with both. All three tempt to excess, and require, in a good many of their votaries at least, the wholesome exercise of self-restraint to prevent injurious consequences. Opium, like alcohol, is greatly restricted in its geographical range by conditions of climate and race, whereas tobacco is equally at home in every climate and with every race. On the other hand, opium is more akin to tobacco than to alcohol, in the large part played by personal idiosyncrasy in determining its diffusion through a community. Opium and tobacco are also alike in not producing in their users any special organic tissue changes, even when carried beyond the verge of moderation; whereas alcohol, if used in habitual excess, produces special organic changes by which its operations can be tracked, both during life and after death.

*Distribution and Prevalence.*—The opium habit is disseminated all over India, and through all classes of society, but very irregularly, according to climate, locality, race, caste, and religion. It is difficult to form a reliable estimate of the proportion of opium-eaters in a community. The habit is, by its nature, cryptous and undemonstrative. The consumers carry with them, hidden in the folds of their garments, small pieces of opium or little boxes containing opium pills. The dose is taken without show; it neither taints the breath nor colours the saliva. Servants in domestic or personal service may practice the habit for long years without awaking any suspicion on the part of their employers that they are opium-eaters. For this reason the estimates given of the ratio of opium eaters to population must be taken with great reserve, and considered as rough guesses rather than as precise statistical data.

A few of these estimates may be cited as showing their great disparity. In the district of Balasore, in Orissa, Dr. Vincent Richards estimated the opium eaters as forming 7 to 8 per cent. of the adult population. Mr. Driberg rated opium consumers among the native Assamese as 30 to 35 per cent. of the adult males, and among the Mikirs (a tribe in Assam) as 80 to 85 per cent. Dr. O'Brien calculated the opium-eaters of Burdwan as only 5 per cent. of the adult males. Dr. Juggo Bundo Bose, a Native physician at Calcutta, reckoned that not more than 2 per cent. of the adult males among his countrymen habitually consumed opium. Another witness from the same quarter estimated the number as 5 or 6 per cent. Dr. Cobb judged that some 3 to 5 per cent. of the whole population of Dacca in Eastern Bengal were opium-eaters; this would correspond to about 12 to 20 per cent. of the adult males. The Marwaris, a caste of enterprising merchants from Marwar in Rajputana, but scattered all over India, are large consumers. According to Dr. Harvey the "majority" of them are opium-eaters. Dr. Hall, speaking from his experience in the North-Western Provinces, estimated that one half of the elderly men were habitual eaters. One of the largest, and certainly the most precise, estimate laid before the Commission was that of a Zemindar, whose estates lay in the Bengal Presidency. He stated that in his native town of Uttarpara, containing somewhat over 6,000 inhabitants, there were 821 opium-eaters. A native medical practitioner of large experience at Benares said that in that city 75 per cent. of the Mahomedans were consumers, 25 per cent. of the Hindus, and 5 per cent. of the Native Christians. Mr. Lely, collector of Surat, estimated that 3,000 persons took opium out of a population of 108,000 in that city. Of these 2,000 are Mahomedans and 1,000 Hindus; altogether about 3 per cent. of
Qn. 22,648. the inhabitants. Dr. Moriarty estimated the habitual consumers in Meerut at no more
Qn. 13,989. than 3 per cent. of the adult population. A semi-official estimate made in 1890, of the opium-consumers in the city of Bombay, showed that there were 7,000 opium-eaters in a population of 821,000, or less than 1 per cent. of the total inhabitants.

Taking India all through, it is evident that only a minority of the inhabitants, generally a small minority, even of the adult males, are opium eaters.

The dual character of the opium habit, with its medicinal side and its euphoric side, explains some of the irregularities and anomalies in its distribution. The habit prevails in excess of the average among the peasantry in low-lying, damp, and malarious districts; it also prevails in excess of the average among the Rajputs and Sikhs, and in such cities as Lucknow and Benares, where there is a large class of idlers. In the former case the excess may be said to be due to the solicitation of the medicinal side of the habit; in the latter case the excess may be said to be due to the solicitation of the euphoric side of the habit.

Another factor which affects the distribution of the opium-habit in India is the existence of groups and sects with whom abstinence from the use of opium is an article of religion. The great mass both of Hindus and Mahomedans regard opium-eating as a permissible indulgence; but certain precisians of both cults interpret their sacred writings in the sense that opium, being an exhilarant, comes under the general ban against all intoxicants, and is, therefore, forbidden to the truly orthodox.

Besides these precisians who do not form separate communities, there are distinct sects in which abstention from opium is an express religious obligation. Among these are the Ferazis, a sect of puritanical Mahomedans, dwelling in Eastern Bengal; these abstain not only from opium but also from alcohol and hemp drugs. A Native witness from Assam stated that opium "is religiously prohibited amongst "the disciples of the Dehing Gossain, one of the principal spiritual guides in Assam. "Any of his disciples using it is excommunicated, and never restored to society unless "a severe penalty is paid." The Buddhist priesthood in Burma appear to hold a similar attitude, and to regard the use of opium as a "sinful vice." In Gujarat there is a flourishing Hindu sect, numbering some 400,000 members, started about a hundred years ago, called the Swami Narayan sect, whose religious tenets include abstention from opium and all intoxicants, and even from strong smelling things such as leeks and onions.

Qu. 4813. Qn. 10,511 Qn. 8326. Qn. 24,574, 24,575, 24,599–603.

The questions of *tolerance* and *susceptibility* are of great importance in regard to a right understanding of the opium-habit, and a good deal of misapprehension has arisen from want of attention to these questions.

*Tolerance.*—The evidence laid before the Commission with respect to the prevalence of the practice of opium-eating, and the doses used, indicates that the Natives of India have, generally, a higher tolerance for opium than Europeans; that is to say, that the former are able to bear larger doses of opium, without experiencing toxic effects, than the latter. Exceptions of course occur, and instances could be cited of Englishmen with as high a tolerance for opium as any recorded in India. This enhanced tolerance appears to be congenital; it is as marked in infants as in adults. In the course of his evidence on this point Dr. Crombie said: "Most of "our Ayahs, who are entrusted with the care of European children, are up-country "women, who are accustomed to deal with their own children in this way (*i.e.*, giving "them opium), and when they find a feverish, fretful English child they give it the "same dose of opium they would give to their own child, and the English child dies ". . . . we have all had experience of that kind." (3502.)

The difference of tolerance for opium between East and West was variously accounted for by the medical witnesses. Some attributed it to one cause, and some to another. It probably depends on a combination of causes—on race and climate, on hereditary acquisition by centuries of use, on the general prevalence of the malarial constitution, and the vegetable character of the diet.

But, besides this racial and climatic difference, there is a still more remarkable difference of tolerance between individual opium-eaters, depending on personal idiosyncrasy. Judging by the practice of opium-eaters, the average tolerance of Natives of India appears to range from 4 to 12 grains of opium per day. But many take far larger doses than these, and consume 20 to 40 grains a day, and not a few 50 to 80 grains a day, without any appreciable detriment to their health. Cases still more extraordinary were quoted before the Commission. Dr. Kailas Chunder Bose (of Calcutta) stated that he had seen a religious mendicant take in his presence about 2,000 grains of crude opium, and that the man was a perfect model of health and vigour (3783). Another Native physician at Calcutta related that he was acquainted with a singer who, after singing for three or four hours, would take 300 grains of opium, and then would go on singing again, keeping accurately to time and tune (3879). These figures seem to show that the range of tolerance, depending on individual idiosyncrasy, among opium-eaters, is far more extended than the range of tolerance for alcohol among alcohol drinkers, or the range of tolerance for tobacco among tobacco smokers. Indeed, it would appear as if some men were almost insensitive to the toxic effects of opium.*

*Susceptibility.*—It has already been pointed out that opium has a dual action on the human constitution. It operates as a therapeutic agent, as an anodyne and hypnotic; and it also operates as a euphoric agent, as an exhilarant and restorative, after the manner of alcohol and tobacco. These two actions are not only not identical, but they are not always concurrent—that is to say, that persons may be sensitive to the anodyne and hypnotic effects of opium, and yet not be sensitive, or only slightly sensitive, to its exhilarant and restorative effects. The therapeutic effects of opium are much alike—tolerance apart—in all persons and in all climates, but it would seem as if only a select portion of the population were susceptible to its euphoric effects. Tobacco offers an apt illustration of this point. Tobacco smoking is pretty generally diffused among Englishmen; yet there are a great many who never smoke, or who

* It is of course understood that the tolerance of a person for opium undergoes a certain, or even considerable, expansion with use. But this expansion is presumably, as in the cases of alcohol and tobacco, strictly limited for each individual according to the measure of his original endowment.

only smoke occasionally, in company; they are abstainers, simply because they experience no enjoyment from the practice. However much they wish, and however long they try, these persons cannot become tobacco smokers in the proper sense of the term, because they lack sensibility to the euphoric effects of tobacco.

Opium, as regards its euphoric properties, seems to be even more selective than tobacco. In India, no doubt, the susceptible persons are numerous—amounting perhaps to a majority of the adult males in certain districts and among certain races—and amounting to a considerable number throughout the country. In Europe, on the other hand, the susceptible persons seem to be exceedingly few. Medical men are in the habit of prescribing opium every day, yet they have practically no knowledge, except from hearsay, of the wonderful reviving and exhilarating effects of the drug, of which so much was heard in India. Had there been the same susceptibility to these effects in the West as in the East, there is no obvious reason why Europeans should not have borrowed opium from India, as they had borrowed tea from China, coffee from Arabia, and tobacco from America.

*Age.*—The opium habit is mainly a habit of middle life and advancing years. Among young adults the habit is comparatively rare, and is only followed by persons suffering from some chronic ailment, or by idle and dissipated young men. The habit is commonly begun between 35 and 45, when life begins to be on the wane and the premonitions of age begin to be felt. This epoch occurs much earlier with the Natives of India than with Europeans. The following table, illustrating the incidence of age on the commencement of the opium habit, has been compiled from data furnished by Dr. Hendley, at Jeypore, in Rajputana, and Dr. R. Moy Roy, at Calcutta.

TABLE I., showing the VARIOUS AGES at which the OPIUM HABIT is commenced.

| Age at which the Habit was begun. | Jeypore. 4,409 Cases. (Dr. Hendley.) | Calcutta. 215 Cases. (Dr. R. Moy Roy.) |
|---|---|---|
| Under 20 years | 9·39 per cent. | 0·5 per cent. |
| 20 to 29 „ | 24·34 „ | 18·0 „ |
| 30 to 39 „ | 28·06 „ | 47·0 „ |
| 40 to 49 „ | 21·57 „ | 28·0 „ |
| 50 to 59 „ | 11·89 „ | 5·5 „ |
| 60 to 69 „ | 3·58 „ | 1·0 „ |
| 70 to 79 „ | 0·82 „ | 0·0 „ |
| 80 to 89 „ | 0·11 „ | 0·0 „ |

The figures in the table indicate that a larger per-centage of opium-eaters begin the habit at an early age in Rajputana than in Calcutta. The general tendency of the evidence laid before the Commission on this point supports the conclusion that the Calcutta averages are more generally applicable to the whole of India than the Jeypore averages. It may be pointed out that the age-interval during which the habitual use of opium falls to its lowest point, is between the third year, when the practice of giving opium to children ceases, and the twentieth year.

*Sex.*—Opium-eating is much more common among men than women. Of 613 cases investigated by Dr. Vincent Richards in Orissa, 73 per cent. were males, and only 27 per cent. females. The disproportion was still greater in the 4,409 opium-eaters examined by Dr. Hendley at Jeypore; of these only 5·34 per cent. were women. This probably is too low an estimate for the population generally. The custom of secluding the women in India renders it difficult to get at the real facts in relation to the female sex.*

*Dosage.*—The doses taken by opium-eaters vary widely. A common allowance is from 2 to 8 grains per day—one half taken in the morning, and the other half in the evening. Among the poor the quantity consumed is much restricted by the scanty means of the consumer. Among the easier classes, the daily allowance frequently runs

* The difference between men and women in regard to the use of euphoric substances is very curious, especially as regards the more potent euphorics. In this country, probably three-fourths of the alcohol consumed, is consumed by men—and the use of tobacco is almost confined to the male sex. This distinction, probably, is mainly due to a constitutional difference of tolerance and susceptibility. But there is also a good deal in fashion. Our grandmothers and great-grandmothers used tobacco pretty freely in the guise of snuff. With the decline of snuff-taking the use of tobacco among women practically went out. But now again the fashion is changing, and the cigarette is creeping into use among women. Possibly the next generation may witness as many female cigarette smokers in England as there were female snuff-takers a hundred years ago.

up to 20 and 40 grains, and sometimes far beyond this. The following tables give an excellent idea of the range of dosage among opium-eaters in India.

TABLE II., showing the RANGE of DAILY DOSES used by OPIUM-EATERS, compiled from Data supplied by Dr. Hendley, Dr. R. Moy Roy, and Dr. Huntly.

| Daily Quantity of Opium taken. | Proportion of Consumers for each Range of Dosage. | | |
|---|---|---|---|
| | Jeypore. 4,409 Cases. (Dr. Hendley.) | Calcutta. 215 Cases. (Dr. R. Moy Roy.) | Nusseerabad. 100 Cases. (Dr. Huntly.) |
| 2 to 5 grains | 21·27 per cent. | 23·0 per cent. | 22·0 per cent. |
| 6 to 10 „ | 17·36 „ | 24·0 „ | 27·0 „ |
| 11 to 20 grains | 29·15 „ | 27·0 „ | 25·0 „ |
| 21 to 40 „ | 18·64 „ | 16·0 „ | 17·0 „ |
| 41 to 90 „ | 8·19 „ | 6·5 „ | 9·0 „ |
| 90 to 180 „ | 1·47 „ | 3·0 „ | 0·0 „ |
| 181 to 2,000 grains | 0·69 „ | 0·5 „ | 0·0 „ |

An examination of the table shows that the proportion of large consumers, in the three sets of observations, stands very high. Over 25 per cent. consumed more than 20 grains per day. Dr. Hendley and Dr. Huntly collected their cases in Rajputana, where the habit is in full development, and where opium is comparatively cheap. Dr. R. Moy Roy's cases were, for the most part, of the better classes, with whom the cost of the indulgence was of minor consequence. A very much lower scale of dosage was observed by Dr. Vincent Richards at Balasore, in Orissa. Here opium is comparatively dear, and the cases collected were mostly from among the poorer peasants. He investigated 613 cases of opium-eaters, 444 men, and 169 women. The following table exhibits the range of dosage observed by him.

TABLE III., showing the RANGE of DAILY DOSE used by OPIUM-EATERS in the DISTRICT of BALASORE, compiled from Data supplied by Dr. Vincent Richards.

| Number of each Sex. | Daily Quantity of Opium taken. | Proportion of Consumers for each Range of Dosage. 613 Cases. (Dr. Vincent Richards.) |
|---|---|---|
| 444 men | 2 to 4 grains | 60 per cent. |
| | 4 to 12 „ | 34 „ |
| | 12 to 16 „ | 4 „ |
| | 16 to 45 „ | 2 „ |
| 169 women | 2 to 4 grains | 79 per cent. |
| | 4 to 12 „ | 19 „ |
| | 12 to 16 „ | 2 „ |

It may be observed that the quantity used by the women was less than that used by the men. The average daily dose for the men was 7 grains; the average daily dose for the women was 5 grains.

*Increase of Dose and Excess.*—The opium habit once begun, is usually a life-long habit. The dose is taken twice a day, morning and evening, before the morning and evening meals. Sometimes the dose is taken three times a day, and sometimes only once a day, in the evening. So long as the opium-eater gets his dose punctually, and his consumption is moderate, he is quite undistinguishable from the rest of the community. His system adjusts itself perfectly to the new factor in his environment. All the functions are performed in due order, and with normal efficiency.

At the beginning of the habit there is a tendency to a progressive increase of the dose. This increase goes on until the limit of the individual tolerance is approached. When this point is reached the dose become stationary, and usually remains stationary for years, or for life. Sometimes an oscillation is observed, the quantity is increased for a period, or diminished for a period, according to the exigencies of health, or apparently according to the waxing or waning tolerance of the constitution.

Excess in the use of opium is to be measured not merely by the quantity habitually consumed, but much more by the constitutional tolerance of the individual. Doses which are injurious to one consumer, may be quite harmless to another consumer. When an opium-eater goes beyond his tolerance, he may be said to go to excess, whether the quantity consumed be small or great. An opium-eater who, on occasion, indulges in a larger dose than his usual allowance, shows signs of opium intoxication. He becomes sluggish and drowsy ; if he be a magistrate, he nods on the bench, and is, perhaps, made the subject of gentle chaff by his brother magistrates. These signs soon pass off, and leave no trace behind. But when the excess is habitual, more serious results follow. The consumer becomes persistently indolent, stupid, and incapable of attending to his business, his appetite falls off, and he becomes lean and shrivelled. The bowels are either obstinately costive, or there is alternate diarrhœa and constipation. No organic disease is developed ; and the man continues to live on, provided he escape intercurrent disease, to his natural term ; but his useful life is certainly shortened, and he becomes a cumberer of the ground. This is the " opium sot," or " opium wreck " of popular description, and a very deplorable object he must be. Fortunately, he is a rare spectacle, and many experienced witnesses had never seen him, and scarcely believed in his existence. It is, however, probable that the opium sot is not so scarce as his rare appearence would indicate. A man in this condition would naturally seek the shade, and keep himself out of the way.

*Postponement of the Dose.*—If the opium-eater does not get his dose at the appointed time he feels very uneasy ; he looks stupid and exhausted, his eyes and nose begin to run, he yawns, has pains about the abdomen and no appetite for his meal. When at length he obtains the belated dose all these symptoms vanish as if by a charm, and the equilibrium of the system is restored.

*Stopping the Opium Habit.*—When the supply of opium is suddenly and entirely cut off the reaction is much more pronounced than in the case of alcohol and tobacco. It is a dreaded ordeal to most consumers, and forms a serious obstacle to the giving up of the habit, when such a course is desired from motives of economy or religious scruples. It is the general rule in Indian gaols to cut off the supply of opium to prisoners on admission. The medical officers in charge of gaols were thus able to furnish the Commission with reliable and exact information on the effects of suddenly stopping the opium habit. It is true that a certain amount of smuggling of opium into gaols by friends of prisoners takes place in spite of all precautions, but that this leakage is insignificant is proved by the fact that the effects of deprivation were clearly perceived by the medical officers of the prisons, and that their testimony as regards these effects was remarkably uniform. The usual effects of stoppage are :—looseness of the bowels, dejection and misery, restlessness and loss of sleep, failure of appetite, aching of the bones, lassitude, and weakness. These symptoms are more or less severe and protracted according to the largeness of the dose to which the prisoner has been accustomed and the length of time during which the habit has been continued. A good deal also depends on the temperament of the sufferer. A man of nervous quasi-hysterical temperament suffers more than a man of more stolid disposition. After a few days, or a week or two, these symptoms subside and health is restored. As a rule the disturbance is slight and calls for no interference in the way of special treatment on the part of the medical officer. Sometimes, however, the disturbance is more severe, and may even, in exceptional cases, assume alarming proportions. In these latter the initial shock approaches to a state of collapse, or the looseness of the bowels passes on to intractable diarrhœa of dysenteric character. In such cases the medical officer is obliged to resort to the use of opium again, and to finally withdraw it by slow degrees. Instances are not unknown, though seemingly of extreme rarity, where life has fallen a sacrifice to the process of stopping the opium habit. Such instances are, however, only known in the case of prisoners whose health is seriously deteriorated by the excessive use of the drug, or who are at the time suffering from some intercurrent disease.

*The Opium Habit and Food.*—The Commission were frequently told that people who were well off and had plenty of good food tolerated the opium habit with impunity, whereas the poor, with an insufficient supply of food, suffered from it. On the other hand we were often told that opium ameliorated the lot of the underfed man, and enabled him to live longer and better with a scanty diet. This latter view seems to be largely held by medical men in India ; and it is interesting to note that physiologists

in Europe have held a similar opinion with regard to alcoholic beverages and tea and coffee—namely, that one of their purposes to the poor consumer was to serve as economisers of food. There may be an element of truth in both these allegations. A large consumer might spend too much of his scanty income on opium, and leave too little for food, and thereby aggravate his condition; while a frugal consumer might benefit from spending a small modicum of his earnings on opium, and thereby making his scanty meals go farther.

Opium is said to be useful to those who live chiefly on rice. Dr. Cobb explained this point in the following way: "In the damp climates of Eastern Bengal the poor "Natives are in the habit of eating largely of rice, and a peculiar sensitiveness of the "bowels seems to exist in those damp climates. As a man advances in age digestion "fails to some extent, and the food is hurried through the intestines . . . . The "effect of hurrying food through the intestines is to cause diarrhœa, dysentery, and "other allied affections. Opium in small doses prevents this, and it is largely used "by the poor in Eastern Bengal." Qn. 3723.

Dr. Elizabeth Bielby, examined at Lahore, stated that it was a general practice in the Panjab for the women to take a small dose of opium (about a grain) just before or with their midday and evening meals, as a "digestive."

But the most curious relation of opium to food is the practice common to opium-eaters of indulging largely in milk, ghee (clarified butter), and sweetmeats. This kind of food is believed to help the opium to agree, and also to prevent or postpone the injurious effects of the immoderate use of opium. And it was constantly alleged that the poor, who cannot afford these indulgences, suffered in consequence more from the abuse of opium than well-to-do people. There are probably sound reasons for this practice. One of the plagues of the opium-eater is chronic constipation, and free use of milk, ghee, and sweetmeats would help to keep this tendency in check. Another tendency of opium consumers is to grow unduly lean, and a good many confirmed and large opium-eaters are noted as spare, wiry men. Milk, ghee, and sweetmeats are eminently fattening articles of food, and very easily digested; these articles would therefore be a peculiarly fitting addition to the dietary of an opium eater.*

*Effect of the Opium Habit on Health and Longevity.*—It is a matter of no small difficulty to justly assess the influence of the opium habit on the health and longevity of the consumers. On the one hand, a large body of evidence was laid before the Commission to the effect that opium-eaters were, to an important extent, protected by the habit against the inroads of diarrhœa, dysentery, ague, and other maladies incidental to damp and malarious climates, and that lives innumerable were thus saved. On the other hand, valid evidence was adduced that the habit tended to excess, and that excess was injurious to health, and that many lives were lost in consequence. Both these contentions may be taken as true; and the problem is to balance the gains and losses. It is obvious that such a problem is, from its very nature, incapable of an exact numerical solution; and the inquirer is constrained to draw his conclusions from an examination of a number of separate items of evidence and a broad consideration of the general tendency of that evidence. Proceeding in this way, and judging from the aggregate of the evidence laid before the Commission, it does not seem possible to doubt that the lives saved by the opium habit, as practised in India, and under the climatic and other conditions prevailing in India, outnumber the lives lost through the habit. A good deal of the evidence on which this conclusion is based will be disclosed subsequently in dealing with the subject of opium as a household remedy and as a prophylactic against malaria. The following points may be dealt with here:—

The opium habit does not appear responsible for *any disease peculiar to itself*; and post-mortem examinations of opium-eaters who had died of natural disease, have not revealed any tissue changes, or disease of any organs, which could be traced to the use or abuse of opium. Neither does the habit affect the chances of life after surgical operations. Opium eaters *bear operations* as well, and recover from them as quickly, as those who are not addicted to the habit. The testimony of hospital surgeons in India on both these points was practically unanimous.

The general health of opium-eaters, provided they keep within their tolerance, appears to be just as good as that of other people. A considerable number of confirmed

* Dr. Pouk relates that at the age of 40 every Persian who wants to avoid obesity takes daily an opium pill. (Cited by Dr. Ernest Martin, *L'Opium*, p. 18.)

opium-eaters appeared before the Commission as witnesses; and they could not be distinguished in any way from other persons of the same age and station in life.* Numerous instances were mentioned, both by British and Native witnesses, of persons who had reached an advanced age, although they had habitually consumed large quantities of opium for 20, 30, and 40 years. Remarkable evidence on this point is supplied by the table of 215 opium-eaters examined personally by Dr. Moy Roy at Calcutta (Appendix XXII., Vol. ii., p. 423). Of these 215 persons, fifty-two were between 60 and 70 years of age, eighteen between 70 and 80, and five between 80 and 90 years of age, and one died at the patriarchal age of 106 years, after having consumed the enormous dose of 180 grains of opium daily for 66 years. Out of these 215 persons, 213 were still living at the date of the record, and of the health of these Dr. Moy Roy remarks: "With the exception of seven persons, who are in indifferent health, all these "persons may be said to be in good condition of body and mind, of course making "allowance for the age of those who are old. The rest of the number were found to "enjoy good health of body and mind, equal in every respect to that of the average "native not given to this habit." (Vol. ii., p. 418.)

Some of the medical witnesses expressed the opinion that opium-eaters, especially those who consumed immoderately, had a less chance of recovery from *intercurrent disease* than those not addicted to the habit. Dr. Mullane put the matter in this way: "For although opium-eaters do undoubtedly enjoy a marked degree of immunity from "malarial fever, dysentery, or diarrhœa, still an old opium-eater attacked with "dysentery or diarrhœa enjoys a smaller chance of recovery than a non-opium eater." (Vol. ii., p. 461.) It seems highly probable that persons who have habitually gone to excess in the use of opium would thereby lower their vitality, and thus diminish their power of resisting the attacks of intercurrent disease.

The habitual use of opium does not appear to affect *longevity*. The late Sir Robert Christison, in 1845, published biographies of 25 opium-eaters collected by himself. He came to the conclusion that the evidence thus collected rather tended to throw doubt over the popular opinion that the opium-habit shortened life (Treatise on Poisons, p. 718). Mr. McLauchlan Slater, manager and actuary of a large insurance company at Bombay, engaged in the business of insuring Native lives, had come to the conclusion, after 20 years' experience, that it was not necessary to put an extra premium on the lives of moderate opium-eaters. (Vol. iv., p. 228.)

*Insanity.*—The evidence tendered by the medical officers in charge of lunatic asylums in India was uniform to the effect that the opium-habit is rarely if ever a cause of insanity. Dr. Crombie analysed the statistics relating to the causes of insanity in the asylums of Lower Bengal, the Bombay Presidency, and the Madras Presidency. In Bengal the proportion of opium-eaters among lunatics was 0·36 per cent.; in the Bombay Presidency 0·75 per cent.; and in the Madras Presidency (only one year's returns available) no opium-eaters figured among the admissions (Appendix XXI., Vol. ii., p. 410). He remarks that "it would become almost justifiable to advance the "theory that one of the advantages derived from the habit of eating opium is a "diminished liability to insanity" (Vol. ii., p. 410).

Dr. Boyd, superintendent of the Colaba Lunatic Asylum, Bombay, containing an average number of 285 inmates, stated that in 11 years only three cases were admitted in which opium was put down as the probable cause of the insanity. He further says, "I do not think that opium has ever produced or ever will produce insanity; that is "my very strong opinion. It may, in large doses, produce hallucination for a short "time, but never insanity of any form" (24,786–7).

*Suicide.*—Some of the witnesses expressed the opinion that the opium-habit in India was promotive of suicide. One witness contended that opium "is of all poisons the "one which must be most attractive to a suicide. It presents death in its easiest and "most delightful form to one who has reached that state of mind. I believe that its "free sale does greatly encourage suicide" (2605). This plausible view is, however, not supported by an examination of the official statistics of suicide in the different provinces of India. The subjoined table shows conclusively that the prevalence of the opium-habit has no relation to the frequency of suicide.

* By the courtesy of Surgeon Captain Jennings, 20 Native soldiers of the 32nd Pioneers were paraded before me at Umballa. Of these 10 were opium-eaters and 10 were not. I examined them carefully, and tried to pick out the opium-eaters. I entirely failed; sometimes I was right and sometimes wrong, and as often wrong as right. The opium-eaters were not large consumers; their daily doses varied from 4 to 8 grains.

TABLE IV., showing the PROPORTION of SUICIDES by OPIUM to the TOTAL SUICIDES in the several PROVINCES of BRITISH INDIA; compiled from the Official Statistics printed in Vol. v., Appendix xvi., of the Proceedings of the Commission.

| Provinces. | Total Annual Suicides per Million of Population. | Proportion of Suicides by Opium to Total Suicides. | Annual average Consumption of Opium per Head of Population. |
|---|---|---|---|
| North-West Provinces and Oudh : | | | |
| Average of 5 years - - - - | 61 | 13·5 per cent. | 24 grains * |
| Madras Presidency : | | | |
| Average of 5 years - - - - | 54 | 0·05 „ | 14 „ |
| Central Provinces : | | | |
| Average of 5 years - - - - | 49 | 2·4 „ | 34 „ |
| Bombay Presidency and Sind : | | | |
| Average of 4 years - - - - | 46 | 9·5 „ | 46 „ |
| Bengal : | | | |
| Average of 5 years - - - - | 39 | 11·1 „ | 15 „ |
| Punjab : | | | |
| Average of 5 years - - - - | 24 | 9·0 „ | 42 „ |
| Assam : | | | |
| Average of 3 years - - - - | 20 | 5·0 „ | 141 „ |

It will be observed that, taking all the provinces into consideration, the per-centage of suicides by opium has no relation to the general prevalence of suicide. For although the figures for the North-Western Provinces appear to show the existence of such a relation, inasmuch as the proportion of suicides per million of the population and the per-centage of these due to opium both stand highest on the list, the figures for Madras and the other provinces entirely negative this deduction. Nor is there any connexion between the amount of opium consumed in a province and the prevalence of suicide in that province. The province of Assam, which has the largest consumption of opium, shows the smallest proportion of suicides; and Madras, which has the lowest consumption of opium, stands second on the list in proportion of suicides.

*Relation of the Opium Habit to the Generative Functions.*—Opium has a repute as an aphrodisiac all over the East. But as it shares this repute with a score of other drugs and nostrums the fact loses much of its significance. Aphrodisiac agents have lost credit in modern medicine, and it is very doubtful if opium have any special power in this direction. The medical witnesses were by no means in agreement on this point. Some said opium stimulated the sexual function; others said it was not so, but that it protracted the orgasm; others, again, said it was at first provocative and that afterwards it produced impotence. The truth probably is, that the general stimulating and restorative effects of opium on the Natives of the East, like those of alcohol on the Natives of the West, extend to the sexual function, but that they have no special relation to that function. It is also probable, and more than probable, that the deadening of the vital functions which overtakes the opium-eater who habitually exceeds his tolerance, involves the sexual function, and tends to impotence.

Attention was called by Dr. Vincent Richards to the diminished fecundity of opium-eaters. Speaking from a careful study of 613 opium-eaters in Orissa, he says: "There " is one almost inevitable result of a prolonged indulgence in opium-eating, especially " if immoderate, namely, a weakening of the procreative powers. In no fewer than " 99 cases out of 125, into which I particularly inquired with a view to ascertaining " the fact, was this the case; moreover, of the 125 married men averaging 36 years " of age, the average number of children to each was 1·11, after 11 years of married " life. The average dose taken by these men was 14 grains *per diem*, and the length of " time they had been addicted to the habit, 12 years" (Vol. ii., p. 437). The statistics collected by Dr. Hendley at Jeypore seem to point in the same direction, but not nearly so strongly. He made inquiries as to the number of children of 4,359 opium-eaters: of these, 2,798 had issue, namely, an average of 2·9 children to each person: while 1,591 had no issue—so that for the whole number there was only an average of 1·8 child for each person.

* This is the consumption for the North-West Provinces; the annual consumption for Oudh is 15 grains per head.

I scarcely know how to interpret these figures. There is certainly no lack of fecundity in India. The population shows a satisfactory normal increase in every province, and the birth-rate throughout the country is higher than in England. The birth-rate in England averages 31·4 per 1,000, while in India the birth-rate averages over 42 per 1,000. It must be remembered that the opium-habit is, in the main, a habit of middle life and advancing years, and is not often practised in youth and early manhood. On the other hand the congress of the sexes takes place very early in India, and chiefly, before the opium-habit has attained much development. Perhaps the explanation of the apparent paradox lies in these two circumstances.

### (2.) Opium as a Household Remedy in India.

Opium is largely employed all over India as a domestic medicine, and centuries of use have familiarised the inhabitants with its administration, both as an internal remedy and as an outward application. It is resorted to in the manifold ailments incidental to damp and malarious climates—in diarrhœa, dysentery, chills, recurrent febrile attacks, and the neuralgic troubles of the malarial cachexia. It is also their chief resource in asthma, chronic coughs, rheumatic pains, diabetes, gravel, and indeed in all painful wasting diseases of every kind.

It is a fact which was brought to the knowledge of the Commission during their tour in India that large masses of the people are as yet beyond the reach of European medical aid. The dispensary system which has been organised throughout India is still inadequate for the immense needs of the population. The native practitioners—the Hakims and Vaids who follow the Arabic and Hindu systems of medicine—are without any regular training; they are self-taught and self-appointed, and the knowledge of medical matters possessed by many of them is not much greater than that of the people among whom they practice. The consequence is that the medical aid available for the sick, especially among the poor, is often solely that of the housewife, or of the wise woman of the village.

Dr. Maynard informed the Commission that the district of Nuddea, in Bengal, where he had been stationed as civil surgeon, possessed an area of 3,404 square miles, with a population of over 2,000,000. He was the only European medical officer in that district. He had to aid him an assistant-surgeon, with a number of native unqualified hospital assistants, and five dispensaries scattered over the district. But there were large numbers of people who could not avail themselves of these dispensaries, and who could not travel the necessary distance (3,338). The last report of the medical institutions of Bengal shows that in a population of over 70,000,000 only a comparatively small per-centage got any benefit from the Government medical institutions.

It is not difficult to understand how, under these circumstances, opium, with its unrivalled power of alleviating pain and producing sleep, and of controlling the intestinal fluxes which the natives so justly dread, should have become an indispensable article in Indian households.

The testimony of some of the most experienced members of the Indian medical staff in regard to the value of opium as a domestic remedy was impressive. Surgeon Major-General Rice, speaking from an experience of 37 years, said: "In the Central Provinces "malarial fevers, with severe ague, and dysentery, and diarrhœa, and, I should add, "rheumatism are diseases with which the people are afflicted. In these, muscular "pains, nervous irritability, griping, and tenesmus are common and persistent, "symptoms causing an amount of depression and inability to exert oneself that can "only be appreciated through actual suffering. . . . . It may, I think, be safely "stated that not 10 per cent. of the population all over India ever consult a medical "man of any nationality practising the European system of medicine. . . . . "Practically, therefore, the great majority of the population are beyond the reach of "such advice. The consequence is that either they must consult Hakims or Vaids, "who invariably administer opium for these torments, or they have discovered its "beneficial effects and take it themselves. They soon have to take it regularly, for "these torments are ever present in one form or another, and seriously hinder the "people in their work. The effect in such cases is magical; a man literally disabled "from these ills, after a dose of a quarter or half a grain of pure opium, in a few "minutes becomes a new man, and is able to do a full day's work. He knows that "if he cannot do this he and his family must starve" (2145–6–7).

Surgeon Lieut.-Colonel Crombie, now Superintendent of the General Hospital in Calcutta was equally emphatic. He stated, in the course of his evidence: "I think it "is desirable that the Commission should know something of the conditions of life "obtaining in a place such as I have lived in for a great part of my service in India

"I refer to Eastern Bengal. There, when a man wants to build a house, he first of all "digs a tank, and with the earth from which he has dug the tank he raises a mound, "and on the top of that mound he places his house. The elevation of that mound "depends entirely upon the height to which the annual floods rise. The floods rise "with fair regularity; but sometimes they go two or three inches higher than the "average, and then the inhabitants of those houses have to live on rafts inside their "houses, and their cattle are tethered up to their bellies in water. These people have "generally no boats. They paddle about on rafts made of the plaintain tree, and the "boys go to school in what I call washhand basins. They are earthern gumlas. The "boy squats at the bottom of the gumla, and paddles to school. This is the only "means of communication. Some of those dwellings are extremely isolated. There "may be only one household within four or five miles. There is no native doctor or "dispensary within five or ten miles of them. I am convinced that to deprive these "people of the possession of opium, except under medical advice, would be a terrible "and wanton cruelty. It is the only medicine of any value that is available to them, "and if you deprive them of it I should not like to be one of those who do it" (3254).

### (3.) Opium as a Remedy and Prophylactic against Malaria.

The belief in the usefulness of opium in the complaints of damp and malarious regions is very widely spread. It is well known that there used to be a disproportionately large consumption of opium in the marshy districts of England—in the fens of Cambridgeshire and Lincolnshire, and in the Romney marshes. These parts were formerly highly malarious, and laudanum was enormously used as a household remedy.* As the marshy lands were drained, and ague diminished, and as also quinine became better known and cheaper, the consumption fell off, but it is still said that there is more laudanum sold in those districts than in any other parts of rural England. The same belief seems to have prevailed long ago in Persia. Shah Abbas II., in 1621, issued an edict prohibiting the use of opium in his dominions, on account of the abuse of the drug which had crept into the army, but he exempted from the prohibition the populations which were exposed to the miasmata of marshy regions.† Dr. Polak states that opium is used in large quantities on the swampy shores of the Caspian Sea, as a protective against malaria.‡ The evidence laid before the Commission showed that in some districts of India the local consumption of opium bore a close relation to the greater or less prevalence of malaria in the localities.§

India is more or less malarious from end to end, and suffers severely from the diseases incidental to such climates. A glance at the official statistics of the causes of death in British India shows that "fevers," by which are meant malarial fevers, overshadow all other causes of mortality. In the provinces of Bengal, Bombay, Punjab, and the North-Western Provinces these fevers account for about 70 per cent. of the total deaths; in the Central Provinces, for about 60 per cent.; in Assam, for about 50 per cent.; in Berar, for about 45 per cent.; and in Madras, for about 38 per cent. of the total deaths. These numbers are probably, as I have gathered from conversations with medical officers in India, somewhat excessive. Pneumonia and other acute diseases are sometimes erroneously included under the heading "fevers," but making allowance for all errors of diagnosis, the main fact remains, that malarial fevers dominate the death-rate in every province of British India. The next most prolific causes of mortality are dysentery, endemic diarrhœa, and cholera. These, roughly speaking, account for about 12 per cent. of the total deaths. Such being the dominant conditions of morbidity, it is easy to understand how opium has come to be regarded by the Natives of India as a general panacea for their health troubles. The people have learnt from long experience that opium is to them a help in need, both to alleviate their sufferings, and, more or less, to prevent a recurrence of their feverish attacks. In this general sense there was a consensus of opinion that opium was an invaluable mitigator of, and prophylactic against, the prevailing complaints of the

* Some interesting evidence on this point is recorded in the Proceedings of the Commission (Vol. IV., p. 16).

† Cited by Dr. Ernest Martin (*L'Opium*, p. 16).

‡ Cited by Dr. Ernest Martin (*L'Opium*, p. 18).

§ A striking illustration of this was given by Mr. Wace, Commissioner of the Patna Division. He stated: "The effect of climate in regulating the use of opium is curiously illustrated in the district I know best, viz. "Bhagalpur. The district is cut in halves by the Ganges. The southern part is dry and healthy; the eastern "half of the northern part is damp and malarious, especially where it borders the river Kosi. The three most "malarious thanas, Kishenganj, Madhepura, and Partagang, with a population of 27 per cent. of the whole "district, have 12 per cent. of the opium shops licensed for the whole district. The three driest thanas of the "south, containing a population about four-fifths of the damper thanas, have only two opium shops, while the "three damp thanas have seventeen." (10,840.)

people of India; nor was there any doubt expressed that, as regards its general therapeutic value, opium could not be replaced by any other known remedy.

A more interesting question from a scientific point of view is, whether and to what extent opium has the power to cure and prevent genuine malarial fevers; in other words, whether opium possesses, like quinine, real antiperiodic properties. In order to elucidate this point, it is necessary to advert to the composition of opium and, particularly, of Indian opium. Opium is a very complex substance, containing not less than 16 or 18 different active principles; most of these are in very minute proportions, and do not concern us here. The two most important and abundant alkaloids, or active principles, of opium, are morphia and anarcotine.* Morphia represents the anodyne and hypnotic properties of the drug. Anarcotine is a bitter crystalline alkaloid resembling quinine, and, like that substance, possesses tonic and antiperiodic properties.

There are two descriptions of opium current in India, namely, Patna opium and Malwa opium. The opium used in England for medical purposes is called Smyrna opium. There are considerable differences in the proportions of morphia and anarcotine in these three varieties. These differences are shown in the subjoined Table:—

TABLE V., showing the PER-CENTAGE of MORPHIA and ANARCOTINE in PATNA, MALWA, and SMYRNA OPIUM; compiled from the Patna Opium Factory Laboratory Records (Vol. ii., Appendix xx.).

| Description of Opium. | Morphia, per cent. | Anarcotine, per cent. |
|---|---|---|
| Patna opium (Behar provision cake) - - | 3·98 | 6·36 |
| Malwa opium - - - | 4·61 | 5·14 |
| Smyrna opium - - - - - | 8·27 | 1·94 |

It will be observed that Patna opium is comparatively poor in morphia, but very rich in anarcotine. Smyrna opium, on the contrary, is very rich in morphia, and very poor in anarcotine. Malwa opium is closely akin to Patna opium, but is a little richer in morphia, and a little poorer in anarcotine. Persian opium, of which a good deal finds its way into some parts of the East, appears to be almost identical with the Malwa variety in its per-centage of morphia and anarcotine.

Some 50 years ago quinine became very scarce and dear, and the Indian medical authorities had to cast about for some cheap and more abundant substitute. Attention was directed to anarcotine, and trials were made as to its curative power in malarial fevers. In 1838 Dr. (afterwards Sir William) O'Shaughnessy, of the Indian Medical Service, brought before the Medical Society of Calcutta an account of 32 cases of intermittent and remittent fevers treated with anarcotine. Of these 31 were cured. He also mentioned that 100 cases were treated by his pupils and acquaintances with perfect success. These results and others of a like character caused the Indian authorities to institute further experiments, and, these proving favourable, they caused anarcotine to be prepared in quantity at the laboratories of Ghazipur and Patna and distributed to the medical depôts throughout British India.

Two important communications on the antiperiodic powers of anarcotine deserve resuscitation. They are based on a large experience, and they prove incontestably that anarcotine is scarcely inferior—and, in some classes of cases, is superior—to quinine as an antiperiodic. The first, from Dr. Palmer, is contained in a letter to the Director General of the Indian Medical Department, and is printed in Vol. v. of the Proceedings of the Commission, Appendix III., p. 78. In 1857–9 he treated at Ghazipur 546 cases of malarial fever with anarcotine, in doses ranging from 1 to 3 grains. Of these 541 were cured and five died. In addition to these 546 officially reported cases, he treated with anarcotine a large number of other cases of malarial fever, amounting in all to little short of 1,000 cases. Summing up his general experience, he states that in 70 per cent. the fever was permanently arrested at the second paroxysm after the medicine was administered; in 20 per cent. the arrest was equally sure, but was not quite so quick; and in 10 per cent. the medicine did not appear to have any curative result. He further remarks that there are cases where anarcotine is decidedly more efficacious than quinine, namely, where there is an

* This substance was named Narcotine by its discoverer, Derosne, but this designation is so misleading (seeing that it is devoid of narcotic qualities) that Dr. Palmer re-named it Anarcotine. Dr. Garden adopts this name, and I think it desirable to follow his example.

intolerance of quinine, and where quinine has been given without any effect for a long time.

The second communication is a "Report on Anarcotine," by Dr. Garden, which is published in the 7th volume of the "Indian Annals of Medical Science." Dr. Garden succeeded Dr. Palmer in civil charge of the Ghazipur station in 1859; and at that time a severe outbreak of intermittent fever, of quotidian and tertian type, had to be dealt with. Taking advantage of the opportunity, he subjected anarcotine to an extensive trial. He treated altogether 684 cases, and gives details of 194. Of these 194 cases, 187 were rapidly cured by anarcotine. It only failed in seven cases, or 3·6 per cent. It, moreover, cured some cases where quinine had failed. The doses he employed ranged from 1½ to 3 grains. He expresses his general conclusions in the following words:—"That it (anarcotine) is of equal value to quinine I do not pretend to say, "but that it has a claim to the next place in the ranks of antiperiodics is, I think, an "undoubted fact."

Anarcotine continued in large demand, and was regularly supplied from the Government factories until some 15 or 20 years ago, when quinine becoming again cheap and abundant, the Medical Department refused to issue anarcotine to the medical depôts, and the factories ceased making it (13,484).

The bearing of the observations of Dr. Palmer and Dr. Garden on the prophylactic powers of opium against malarial fevers stands as follows. These observers found that anarcotine in doses of 1 to 3 grains rapidly (in about three days) cut short the paroxysm of intermittent fever and completely arrested the disease. Now Patna opium is estimated to contain 6·36 per cent. of anarcotine. It would, therefore, require 16 grains of crude opium to equivalise the minimum dose of 1 grain of anarcotine, which was found effective in arresting the paroxysms of intermittent fever, and 48 grains to equivalise the maximum dose. From these calculations it may be inferred that only large consumers of opium would be absolutely protected against the malarial poison. A reference to Table II. shows that in Calcutta and Rajputana some 30 to 40 per cent. of opium-eaters might be thus protected, but in Orissa, where the dosage is smaller (Table III.) only some 4 per cent. would be completely protected. It is, however, to be remembered, that a dose of an antiperiodic, which is insufficient to cut short an actually existing attack of intermittent fever, may be sufficient to ward off an attack—that is to say, may be sufficient to act as a prophylactic. This is at least the case with quinine. During an attack of ague, quinine is given in doses of five to ten grains—but a dose of two grains taken daily is held to be effective as a prophylactic against recurrent attacks. The same rule probably holds good as regards opium, and its alkaloid anarcotine. On this view it may be assumed that moderate consumers of opium, although not rendered absolutely immune against the malarial poison, would be more or less protected from recurrent attacks—and if the attacks returned, they would return less frequently and with mitigated severity. These particulars, I think, adequately explain why opium-eaters are not altogether exempt from malarial fevers. The smaller consumers either lack the means, or they lack the tolerance, which would enable them to take opium in sufficient quantity to contain an efficient protective dose of anarcotine.

The question was often mooted before the Commission, why it was that notwithstanding all this evidence in favour of opium in malaria, medical men in India did not prescribe opium for the cure and prevention of malarial fevers. The explanation is very simple in the light of the facts disclosed above. Opium contains morphia as well as anarcotine. This puts an absolute bar to the use of opium as a general antiperiodic. It could not be so used without the most serious risk of narcotic poisoning. Only persons of proved high tolerance for opium, in other words, seasoned opium-eaters, could with safety take a sufficiently large dose of the drug to bring into efficient play the antiperiodic power of the anarcotine contained in it. This is the reason why crude opium can never take the place of quinine as an antiperiodic medicine—not even in the case of the generality of the Natives of India—still less in the case of European residents in India.

It seems highly probable that some of the other ingredients contained in opium, and especially morphia, are of service to the sufferer from malaria. In the condition termed "malarial cachexia" the poison lingers about the system for months and years—but not in sufficient potency to keep up regular febrile paroxysms. Such persons are liable on slight exposure or chill to have a recurrence of the paroxysms; they are then said to be "down with fever." This state of things is well known in India. The opinion was very generally expressed by the medical witnesses, that in the case of Natives thus affected, the habitual use of even a small dose of opium, or an occasional dose when the emergency arose, served to ward off the provocative chill and thus prevented these relapses.

It was also alleged that opium often acted as an indirect prophylactic against malaria, by checking diarrhœa and dysenteric purging. These complaints greatly reduce the strength of the sufferers, and so render them more susceptible to the malarial poison and to the "chills" which are universally recognised in India as the immediate cause of fresh attacks of fever.

Several medical witnesses deposed that they had often found opium in combination with quinine to act better as an antiperiodic than quinine alone.

*Plurality of Malarial Infection.*—Dr. Crombie called attention at Calcutta to a matter of great interest concerning the pathology and therapeutics of malarial fevers—namely, the existence of more than one kind of malarial infection. He said: "When one "comes to India the first thing that strikes one is what seems to be the rooted and "unreasonable objection that the natives sometimes have to be treated with quinine. ". . . . After a time one finds out that this objection is not unreasonable, "and that there are a great many fevers—I might almost say the majority of cases of "fever which I have to treat in Bengal—which are not only not benefited by quinine, "but which are aggravated by it" (3520). Surgeon Lieut.-Colonel O'Brien said: "Latterly my experience has been enlarged in the treatment of fevers, and I have "come to recognise . . the disadvantage of quinine in many cases, and the "undoubted remarkable benefit to be derived from the use of opium" (3606). Surgeon Captain Tull Walsh, speaking from his experience in Orissa, stated that in that province the fevers accompanied by enlarged spleens were not so common as the type of fever not so accompanied—and that he believed that these two distinct diseases had got muddled up under the head of "malaria" (3752–3).*

The recent researches of Laveran in France, of Marchiafava and Bignami in Italy, and of Mannaberg in Germany, come opportunely to Indian inquirers as bearing on the question of the existence of a plurality of type and plurality of infection in malarial fevers. These researches have demonstrated—that the infective material of malarial fevers consists of micro-organisms, living and multiplying in the bodies of the affected persons—and that these micro-organisms are of more than one kind, and give rise to more than one type of fever. Clinical inquirers in India have in this connexion some extremely interesting pathological and therapeutical questions ripe for investigation—and it is not improbable that Indian opium, or rather its chief alkaloid anarcotine, may come to play a larger part in the treatment of Indian fevers in the future than in the past—and that anarcotine may eventually take its place, not as a rival to quinine, but side by side with it, as a twin antidote to malarial poisons, each being superior on its own special ground.

The facts above enumerated go far to account for the diversity of the testimony laid before the Commission on the relations of the opium habit to malaria. It has been shown how small consumers of opium would be less effectively protected than large consumers—and how even large consumers would not be rendered immune against every form of malarial fever. The fact, now established, that malarial fevers are not all of one type throws a new and important light on the subject. The type of malaria prevailing in one district might be amenable to the control of opium, while a different type prevailing in another district might not be thus amenable—and, naturally, the popular belief in the two districts as to the protective or prophylactic power of opium against malaria would vary accordingly.†

It may also be remarked that the non-medical witnesses had not always sufficient knowledge to enable them to distinguish between malarial and non-malarial fevers. Thus some of the witnesses from Assam based their disbelief in opium as a remedy and prophylactic against malarial fever on its inefficacy in an epidemic disease called Kala-azar, which a few years ago caused great ravages in that province. It turns out that Kala-azar is not a malarial fever at all—but a contagious fever of quite a different nature which is not influenced by any anti-periodic remedy. (See an elaborate official report by Dr. Giles on Kala-azar and Beri-beri printed at Shillong, in Assam, in 1890.)

### (4.) The Practice of giving Opium to Infants.

One of the most singular outgrowths of the opium habit in India is the custom of administering opium to infants. The practice is an ancient one and prevails extensively

* It is interesting to note that 35 years ago Dr. Palmer surmised the existence of a plurality of malarial poisons. In the communication before referred to (Vol. v., p. 78) he states that in 90 per cent. of the cases of malarial fever treated by him at Ghazipur anarcotine effected a rapid cure, but that in 10 per cent. it proved entirely ineffective. "This class," he says, "contrasts so strongly with the former that I have been constantly "led to believe there must be some difference in the character of the fever."

† Parasitic diseases are, as is well known, greatly influenced as regards their incidence by racial distinctions—and this peculiarity appears to apply to some types of malarial fever. In India the common types of malarial fever attack Natives and Europeans impartially; but this does not appear to be the case with all types of malarial fever. I have been informed that there are hill tracts in India which prove highly malarious to the European officials stationed in them, but which are not malarious to the Native inhabitants.

all over India, but especially in the North-Western provinces, in the Native States of Rajputana and Malwa, and in the Bombay Presidency. The practice may be considered as part and parcel of the household, or popular, use of opium. The Commission were repeatedly told that 60, 80, and 90 per cent. of the infants were dosed with opium, and with some castes the custom seems to be universal. The practice is begun in the first few weeks or months of life, sometimes even from birth, and is continued up to the end of the second or third year, and sometimes to the fourth, and very rarely to the fifth year. The dose is usually one-sixteenth to one-twelfth of a grain to begin with, and this is gradually increased to a quarter or half a grain, and even to one or two grains, according to the age and necessities of the child. The dose is generally administered night and morning, sometimes only once a day. In most parts of India it is given by the mother in the form of crude opium, a speck about the size of a poppy seed or pin's head is put into the child's mouth or is mixed with its milk. Sometimes suckling mothers smear their nipples with opium. In Bombay "children's pills," or bala-golis, are extensively sold for this purpose. These pills are now manufactured, in order to ensure purity and constancy of strength, under the supervision of the licensed vendor; they are made of two degrees of strength and contain respectively one-sixth and one-third of a grain of opium each, mixed with a variety of harmless spices.* (Appendix XXIV., Vol. iv.)

When the child reaches the age of two or three years the practice is discontinued. The weaning from opium is usually done gradually; but it is quite complete; and any resumption of the habit in adult life is entirely disconnected from the practice in childhood.

The common purpose for which opium is given to infants by the poor and cultivating classes is to keep the children quiet and free from fret while the mothers go about their work in the house or in the field. Dr. Keegan, at Indore, gave us the following touching glimpse of the practice :—"A peasant woman who has to work in the fields "gives her child some opium and puts him in a basket in the corner of the hut, or "perhaps, she takes her child with her to the field, puts him in a small basket and "gives a little opium to keep him quiet." But this custom is by no means confined to the poor and the peasantry, who cannot afford to provide the mother with additional help in the charge of her children. It is followed pretty generally among the well-to-do classes, and even in the zenanas of the rich, where there is no lack of servants to attend to the duties of the nursery. The reasons given for the practice by the native witnesses were, that the opium not only kept the children quiet and comfortable, but also helped them to digest their milk, that it prevented diarrhœa, warded off chills and fever, served to alleviate the troubles of dentition, and generally helped to keep the children in good health. Qn. 21,935.

The advantages and disadvantages of this custom were a good deal canvassed before the Commission. It was shown that accidental poisoning sometimes attended the practice. Children were occasionally brought to the dispensaries in a state of somnolence or coma, from accidental over-dosing by a mother, or from a child getting hold of a lump of opium or a box of bala-goli pills left carelessly about, and so poisoning itself. Most of these cases issued in recovery, but sometimes fatalities occurred. These accidents were not nearly so common as might have been expected—showing the practised skill of Indian mothers and nurses in the management of the drug. Some of the medical witnesses expressed a doubt whether fatalities from this cause were more frequent in India than occurred at home from opium given to children in the form of soothing syrups and cordials, or dispensed under medical prescription. Dr. Blaney, who was coroner of Bombay for 17 years, could only recall five or six fatal cases of infants being accidentally poisoned in this way. Qn. 26,372.

As regards the general question of the usefulness or hurtfulness of the custom, viewed apart from the risks of accidental poisoning, the opinions laid before the Commission were divided. To European ideas the practice seems very objectionable. The surroundings of child-life in India are, however, so peculiar, in relation to domestic circumstances, to food, climate, and malarial influences, and as regards the exceptional

* The exact quantity of opium in each pill, of the two degrees of strength, is nine-fiftieths and nine-twenty-fifths of a grain. It is to be remembered that Indian opium contains only half the amount of morphia contained in the opium used in Europe for medical purposes.

† In a memorandum on children's pills or bala-golis, presented to the Commission by Mr. McNabb Campbell, collector, of Bombay, it is stated :—"Bombay professional opinion is almost equally divided on the question "whether opium is beneficial or hurtful to children. Of 84 statements obtained in 1893 from members of "the Grant College Medical Society, 27 were in favour of the use of the drug, 30 were against it, 25 gave no "opinion, and two were doubtful" (Appendix XXIV., Vol. iv.)

tolerance for opium of Indian infants, that it would not be safe to judge the custom by European standards.

Indian mothers and nurses, and the Native public generally, have an unquestioning faith in the wholesomeness of giving opium to children, and the accumulated experience of successive generations of parents, extending over hundreds of years, furnishes a body of presumptive evidence which is not to be lightly set aside on the ground of *à priori* considerations. It is difficult to believe that a practice so widely diffused through all grades of society, and carried on under the direct supervision of the vigilant maternal instinct, should have maintained itself so long in credit, if it were on the whole and to any appreciable extent injurious.

Qn. 15,151. 26,672 20,574. 21,882. The general tenor of the evidence of the members of the Indian Medical Service, who had charge of dispensaries and had supervision of vaccination, and had thus ample opportunities of observing the effect of the habit, was to the effect that the practice was generally harmless and sometimes beneficial. It was shown that the children who had opium given them were just as healthy as those who had not opium given them. Dr. Hendley, at Jeypore, examined, for the purpose of the present inquiry, 100 children who were brought up (without any selection) for vaccination. Of these 78 were being dosed with opium, and 22 had not received opium. All the children of both groups were equally healthy.* Some of the medical witnesses expressed a formal disapproval of the habit, but added that they had not actually seen any evil result from it. Others again condemned the custom and alleged that they had frequently seen serious malnutrition and fatal marasmus and atrophy follow the practice.

Qn. 21,298. 16,902. 19,979–90. 21 951.

It is easy to believe that some minor infantile complaints, such as chronic constipation, might be unfavourably affected by the practice of giving opium to children, and benefited by its suspension, without attracting special notice from medical observers. But it is not easy to believe that serious marasmus and atrophy could, as alleged, frequently arise from a practice so common without having been long ago detected and generally recognised by medical practitioners and writers in India. Moreover, it is obvious that there must be some contributory factor or factors, in addition to the opium, to account for the production of such cases, otherwise more than half the children in some parts of India would be in a state of atrophy. The most convincing evidence on the occurrence of opium marasmus in infants, was given by Dr. Huntly at Ajmere. He said, "I can recall to my memory a dozen, or perhaps a score, of "instances (of marasmus) in which, acting on my advice, the parents stopped the opium, "and the child recovered health and plumpness" (21,324). Dr. Huntly was not able to indicate the contributory factors which accounted for these exceptional instances. It is well known that infantile atrophy may occur in otherwise healthy children simply as the result of insufficient breast milk in underfed or unhealthy mothers, or as the result of chronic functional derangements affecting the digestion and assimilation of food.† Children thus suffering would, in India, as a matter of course, be dosed with opium, and even cautious observers might be misled as to the true causal sequence. There is another group of cases, involving waste and emaciation, encountered in India, which might prove similarly deceptive. Children in India are liable, like adults, to the malarial cachexia, and infants in arms are sometimes found with the characteristic enlarged spleen. Mothers who suffer from malarial fever during pregnancy appear capable of transmitting the disease to their offspring congenitally or through their milk.‡ Such cases would be sure to have opium given them, and might easily be misinterpreted, especially in those instances, and they are not uncommon, where the malarial cachexia is unaccompanied with enlarged spleen.

Qn. 3330–3.

Qn. 18,828.

In studying this most strange custom of giving opium to infants, it is necessary for the inquirer, if he is to reach valid conclusions, to divest himself of his European ideas concerning opium and infants, to examine the actual facts with an open mind, and, above all, to fully realise the complexity of the etiological problems involved. The following quotation from the evidence of Dr. Arnott, physician in charge of St. George's Hospital, Bombay, will, I think, find an echo in the experience of most medical men in India who have paid attention to this subject. "On infants, who are otherwise "well cared for, the use of opium has not the bad effect I was prepared to expect. I "have seen many infants to whom opium was habitually given quite well-nourished

Qn. 24,674.

* A sect of Shia Mussulmans, called Bhoras, are said not to give opium to their children. Dr. Keegan, speaking at Indore, said of these:—"They happen to be the most unhealthy children in this part of the "country, . . . . whether it is through not taking opium I do not know, but as a matter of fact the "children of the Bhoras are very unhealthy" (21,928–9).

† Prof. Henoch's description of infantile atrophy from these causes corresponds exactly with the description given of the so-called "opium baby." (*Lectures on Diseases of Children*, Syd. Soc. Ed., Vol. i., p. 72.)

‡ Dr. Cleghorn, who was examined at Lahore, informed me privately that he had encountered enlarged, malarial spleen in *new-born* infants, and verified the fact at the autopsy.

" and healthy, but others ill-fed and ill-cared for, are emaciated, and, no doubt, among " these last there is a large mortality. In such cases, it is not easy to separate the " effects of opium from the other causes of infantile mortality in large towns."

### (5.) Use of Opium on Occasions of Ceremony.

In the protected States of Rajputana, Central India, and Gujarat opium is largely employed on various ceremonial occasions. It is so used during religious festivals, on State occasions, at the celebration of marriages, at births and funerals, as a token of welcome to friends, and as a seal of reconciliation between adversaries. A preparation called "amalpani" or "kasumbha,"* is commonly used on these occasions. This is a strained solution of opium in water, and it is drunk in company, as a sort of social solvent, like wine. Opium in the solid form is also distributed, as largesse, by chiefs and hosts to relations, guests, retainers, and the poor. Some of the accounts of these customs laid before the Commission are very curious.

Sir Lepel Griffin thus describes the use of opium as a court observance in Rajputana. " A native Rajah with all his court sitting around him, will call for his attendant, who " will pour some of it (opium water or amal-pani) into his hand, and he will drink it " off, and every one of the men round him will drink it in the same way " (1585).

A high Native official at Jeypore gives the following account of the ceremonial uses of opium among the people of the Jeypore state. " On occasion of the annual celebra- " tion of the religious festivals of Akshay Tij, Holi, and Dusserah opium-eating is " looked upon as highly auspicious and conducive to prosperity and happiness. Opium " is accordingly distributed among relations, as well as among friends and dependants, " whether Hindus or Mahomedans, and the drug is partaken by all concerned as " something sacred. Marriage contracts, and the celebration of marriage among " Rajputs, are considered neither auspicious nor valid unless opium is eaten on such " occasions. Opium is also used on occasions of funeral ceremonies. Moreover, when " two inveterate enemies become reconciled and propose to pass the rest of their lives " peacefully, they generally partake of opium at each other's hands; and the practice " is recognised as making the tie of friendship inviolable. If either of the two parties " decline to take opium, it is understood that he is not disposed to abide by his " promises. It is generally the practice among natives of India to offer some refresh- " ments to a friend or acquaintance who comes to pay a visit. Pan supari (betel and " betel nuts), tobacco, and spices, are often presented, but a Rajput would offer opium " as an unmistakeable token of friendship and attachment " (20,175).

An officer of the Dholpur State (Rajputana) relates " That opium has been for ages " an established institution in the country. It has come to be looked upon as the " chief factor in some social customs and usages throughout Rajputana. For instance, " it is customary among the Rajputs, at the bethrothal ceremony, that the bridegroom " should eat or drink opium offered by the bride's party. The whole company after- " wards drink the drug by turn, out of the palm of the host. The extent to which " opium has got itself wound up with the daily avocations of the people, as a tradition, " will be realised from the fact that among the Thakurs and others high castes, it is " invariably seen that before beginning a letter, a prayer is expressed on top of it, " asking the addressee to take, on the writer's account, double the quantity of his daily " allowance " of amal-pani (21,655).

Here is a curious picture from Malwa, drawn by the Dewan (administrator) of the Rutlam State: " I should like to add that there is attached to the Palace, at Rutlam, what is called an Abdarkhana, where respectable persons coming to see His Highness or the Dewan are treated with a drink of a solution made of opium (kusumbha). The Jagirdars, as also the servants of His Highness, and citizens who frequent the Darbar office, partake of the drink. If respectable Jagirdars and Thakores are not offered the kusumbha drink, they would feel that they are not treated properly. On a birthday, the Dasora holiday, and at the time of certain darbars, the Thakores, Jagirdars, officers, and others are treated with kusumbha. The darbar is dissolved after all the persons have resumed their seats after having taken the kusumbha. No pansopari, flowers, garlands, &c. are given in such darbars, the kusumbha taking the place of all these things. The Abdarkhana institution has been in existence from time immemorial.

* According to Major Ferris "kasumbha" is thus made in Kathiawar:—"Cut the opium into small pieces, " add a little water, mix to a thick consistency, put the mass into a thick woollen cloth, pour cold water on " gradually and strain through. Drink the decoction without any addition of sugar, or anything to destroy " the bitter taste." The proportion is usually one part of opium to 20 parts of water (22,577).

During the minority of his late Highness the Political Superintendent of the State had to maintain it, and it has been maintained up to this time, though nowadays it is used principally by persons of the middle class. Formerly it cost much, now the cost is much reduced. The importance of the kusumbha drink is so great that in friendly letters and invitations the Thakores, Rajas, Dewans, and others generally endorse in their own autograph as follows:—"After reading this letter, do you take kusumbha "drink as a treat from me in honour of yourself." This request is considered complimentary, and is made by one not inferior in rank to the other. When a friendly letter with such a request is received, the request is in certain cases literally carried out by "at once having a kusumbha party in honour of the person who made the request" (23,232).

Among the occasions on which it is obligatory to take opium, the paymaster of the army of the Native State of Jaisalmir, mentions the following singular instances—"on the visit of a son-in-law to his father-in-law's house"—on "the first removal of "hair of a male child among Rajputs and Charans"—"on the parting (or shaving in "the middle) of the beard of Rajputs and Charans" (21,128).

In the Native States of Gujarat and Kathiawar similar customs prevail. Major Ferris gives the following account of kasumbha drinking among the Natives of the Kathiawar States:—"Among the Kathis kasumbha is consumed at all funerals, "marriages, betrothals, and such like ceremonies. As a fact it is never refused, "but there is no religious obligation to take it. Nevertheless if a Kathi has the "habit and refuses kasumbha on such an occasion it would cause offence. In cases of "reconciliation after a quarrel among Kathis, the drinking of kasumbha, even by "those not having the habit, is *de rigueur*. To refuse would be to raise a suspicion "that the reconciliation was not sincere. Each party must take some, however little, "or the reconciliation is incomplete. It is a necessity almost amounting to a religion "for a guest of a Kathi to be given and to accept kasumbha. A failure on either hand "is a grave breach of hospitality and respect. Promises and verbal contracts and "agreements are sealed among Kathis by the parties drinking kasumbha together. This "makes the fulfilment as binding as an oath. When families agree to divide the "ancestral property by mutual agreement, without having recourse to documents and "the law, the parties drink kasumbha to clinch the undertaking" (22,578).

A Native Inspector of Customs at Ahmedabad gives some picturesque details of the ceremonial use of opium in that district. He says: "The Girasias and Kathis "who live in the southern part of this district have always been using and been addicted "to the habit of eating opium. . . . . Kasumbha is prepared twice a day, that is, "in the morning and evening, when poor wasavas (low class labourers) who are habitual "opium-eaters, are supplied with opium according to their requirements. This is a mark "of generosity. . . . . It is a custom among these people that when guests come to "them from a distance on any unusual occasion, or on ordinary business, the village "barber, on behalf of the guests, invites the resident householders of the village to "drink kasumbha. All those that assemble in response to the invitations are supplied "with kasumbha by the guests at their own expense, and pieces of opium have also to "be given according to the requirements of the persons invited. If one omits to do "this, he is not considered respectable. Another class of people residing in this "district are the Patidars and Kanbis, who have always observed the following usages. "On a wedding occasion one may use opium at his pleasure, but when a respectable old "man dies, the use of opium in honour of his memory is indispensable. During "the first eleven days after the death of the deceased, when the people of the "surrounding villages, with whom such formalities are usually interchanged, come in "crowds to offer condolence, kasumbha has to be supplied to them and their servants, "and opium is also distributed among them. Afterwards on the last, or thirtieth "day, all persons with whom such formalities are usually interchanged, and all relations "coming from a distance, assemble. This gathering is called Saraoni, and if expenditure on a large scale is contemplated, it is called Gam Saraoni. The greater the "quantity of opium one dispenses on this occasion, the more credit he gets" (23,656).

It appears from the evidence of several witnesses that in Kathiawar, and throughout Gujarat, the ceremonial use of opium is on the wane, and tending to die out. This is attributed partly to the spread of Western ideas and the substitution of alcoholic beverages for opium, and partly to economic necessity. In recent years the price of opium in these districts has risen a good deal, owing to increased taxation upon it. In former times, when opium was almost untaxed, the quantities consumed on these ceremonial occasions was enormous. A Native gentleman from the neighbourhood of Ahmedabad informed the Commission that on the occasion of the death of his grand-

father, in 1851, nearly three maunds, or 240 lbs., of opium were consumed in treating the guests, whereas on the occasion of the death of his father, thirty years later, in 1881, not more than 10 lbs. of opium were used by the guests (22,774–5).

### (6.) Opium Smoking in India.

The use of opium in the way of smoking is a subordinate habit in India; and, as compared with the ancient practice of opium-eating, is relatively modern. Opium-smoking is practised in two ways, namely, as *madak-smoking* and as *chandu-smoking*. The preparation of opium used in these two modes is quite different, and the manner of smoking is also different.

*Madak-smoking.*—The substance called Madak (or Madat or Muddat) is prepared by dissolving crude opium in water, boiling the solution, and straining through cloth. The strained product is boiled down to a syrup, and then mixed with charred leaves,* of acacia, betel, or guava, so as to form a soft mass. The mass thus obtained is finally divided into little balls about the size of small marbles. Samples of madak balls obtained by me at Calcutta, have a light porous texture, and a carbonised appearance. The balls weigh a little under seven grains each. The quantity of opium contained in madak probably varies in different markets, but from the mode of manufacture it must be always an attenuated preparation as compared with chandu. Judging by the directions for the manufacture of madak given in Vol. IV., p. 521, and Vol. V., p. 87 of the Proceedings of the Commission, the proportion of opium contained in it would seem to vary from about one-third to about one-fourth. Mr. Gregory, the superintendent of the factory laboratory at Ghazipur, analysed two samples of madak purchased by him in the bazaar at Calcutta. They yielded respectively 0·18 per cent. and 0·21 per cent. of morphia. This proportion of morphia indicates that the madak sold in the Calcutta shops only contains about 4 per cent. of crude opium (13,483).

Madak is usually smoked in the ordinary hubble-bubble pipe. One of the little balls is placed in the bowl of the pipe and covered with a piece of glowing charcoal; it is then smoked much in the same way as tobacco.

*Chandu-smoking.*—Chandu (or Chundoo or Chundool) is prepared by boiling down a strained solution of opium in water in large copper caldrons to a thick consistency. As the concentration proceeds crusts form on the surface of the simmering mass; these are removed in succession as they form. These crusts are again dissolved in water, and the solution is again concentrated by boiling, until, finally, a thick extract is obtained of the consistency and appearance of thick tar. This is the "smokeable extract" used in India by chandu-smokers. It is smoked in the freshly-made, or raw state, without any further preparation; and must be regarded as a coarse form of chandu.† The chandu used in China by the better classes is a much more elaborately prepared article, and is made to undergo, before it is considered fit for consumption, a gradual process of ripening, or maturation, lasting 10 or 12 months, whereby a delicate perfume is imparted to it, which is much prized by connoisseurs in chandu-smoking.‡

Chandu contains a large per-centage of morphia. Mr. Gregory analysed a sample of chandu made with pure opium at the Ghazipur laboratory. He found it to contain 10·17 per cent. of morphia. Two samples of chandu purchased by him in the Calcutta bazaar yielded, respectively, 9·19 per cent. and 9·07 per cent. of morphia. It thus appears that Indian chandu is about twice as rich in morphia as the crude opium from which it is prepared§ (13,479–83).

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* In Bombay madak is made up with the charred husks of a grain called moong. A substance called "green gram" is employed in Southern India for the same purpose.

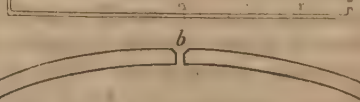
† It should be mentioned that the common chandu smoked in India, and by the poorer classes in China, has its quality lowered by the use, in the manufacture, of the dejections or "dross" scraped from chandu pipes after they have been smoked. This "dross," which is rich in morphia, is carefully collected, and is largely employed to mix with the pure opium in the manufacture of the commoner sorts of chandu.

‡ A detailed account is given by M. Lalande, in the *Archives de Médecine Navale*, for 1890, of the method of making chandu from Bengal opium at the French Government Factory at Saigon. The process is carried out entirely by Chinese workmen, and is said to be an exact counterpart of the process followed in China for the production of high-class chandu. In the same journal for 1892, is a paper by Dr. Calmette describing the slow spontaneous fermentation which constitutes the ripening of the chandu. The fermentive agent, according to Calmette, is the Aspergillus Niger, or black mould, which grows everywhere so abundantly in saccharine media. The chemical results of the fermentation are to destroy the glucose of the opium and to convert the tannin into gallic acid, and to produce, besides, certain aromatic fragrances which impart the desired "bouquet" to the finished article.

§ According to the analysis of Lalande (*l.c.*, p. 69) the chandu made at Saigon, while retaining its full complement of morphia, has only a very reduced proportion of anarcotine.

Chandu is smoked in a specially constructed pipe and in a peculiar manner. The pipe-stem is composed of a tube of bamboo, about 20 inches long and more than an inch thick. One end is closed, and the other end is fashioned into a thick mouth-piece with a large orifice. About 7 inches from the closed extremity is a round hole, mounted in brasswork, for the reception of the neck of the bowl. The bowl of a chandu pipe is usually made of terra-cotta, and is entirely unlike the bowl of a tobacco pipe. The subjoined diagram will assist the reader to understand the description. The bowl (*a*) consists of a hollow disc, or chamber, about $2\frac{1}{2}$ inches wide and about $1\frac{1}{4}$ deep. The upper surface is flatly convex, and at its centre (*b*) is a minute shallow cup, lined with metal, and perforated at the bottom with a small orifice. This leads to a short canal running through the terra-cotta, and is only wide enough to admit a medium-sized pin. The lower side of the disc is continued into a short neck (*c*) which fits into the opening in the pipe-stem.*

Fig.1.



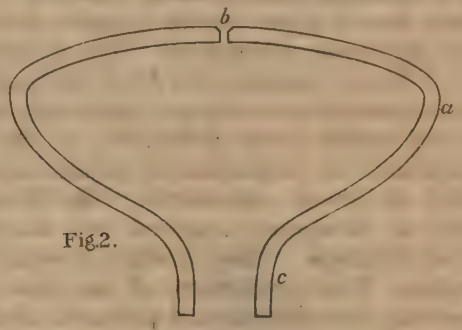



Fig.2.

FIG. 1. Vertical section through a chandu pipe, one-tenth the actual dimensions.
FIG. 2. Vertical section through the bowl of a chandu pipe, actual size. *a*. The bowl. *b*. The receptacle for the charge of chandu. *c*. The neck of the bowl.

The chandu smoker proceeds in the following fashion:—Armed with a pointed probe or style he dips the point into his supply of chandu and takes up a suitable quantity which forms a little drop at the point of the style. This he now carefully heats over the flame of a lamp until it dries up into a soft pilule. He next transfers the little pilule to the shallow cup on the upper surface of the bowl. Then, assuming a reclining position, he cautiously applies the pilule to the flame of the lamp, and at the right moment, when the chandu begins to bubble and to emit smoke, he takes a full inspiration and fills his lungs with smoke, and then slowly discharges it. One or two such inspirations exhausts the charge. A practised smoker will smoke 15 or 20 pipes at a sitting.

Opium-smoking in India is the habit of the comparatively few; it is almost confined to the towns, and is scarcely known among the country cultivators. Mr. Stoker, Commissioner of Excise for the North-Western Provinces and Oudh, who has had special opportunities of studying this subject, said that "probably not so many as 1 "in every 10,000 of the whole population ever smokes opium" (19,527). In the large towns and seaports the proportion of opium smokers is considerably greater than this. In Bombay, with 821,000 inhabitants, Mr. Campbell, collector of Inland Revenue, estimated that before the closing of the licensed houses, in 1892, there were 700 or 800 men who smoked opium in the licensed premises; that is to say, about 1 in 1,100 of the entire population (24,314).

The practice of opium-smoking is generally looked down upon in India as a low and vicious habit. Several of the witnesses thought the practice—and especially that of madak-smoking—injurious to health. Others thought that the injurious effects were not due directly to the smoking, but were due to the associations and surroundings of the habit. These are certainly very bad. The practice of smoking seems to require that it shall be carried on in company, and the premises or "dens" in which opium smokers meet in India are of a squalid and insanitary character. The frequenters of these premises belong to the humbler grades of society. Many of them are, no doubt,

* The above description is drawn up from an examination of four chandu pipes, one bought at Calcutta, two confiscated pipes, kindly given to me by Mr. Westmacott, at Calcutta, and the fourth purchased in Rangoon. All four are essentially alike in construction, but vary in ornamentation. The bowls of the two confiscated pipes are made of brass, and the bowls of the other two are made of terra-cotta.

decent working men, who call for their smoke much as English workmen call for their glass of beer; but these places are also the resort of idle and dissipated and vicious persons—the declassed and homeless waifs and strays who gravitate into large towns. It is easy to understand that such associations and surroundings would be deleterious to the health and corrupting to the morals of the young. Public opinion in India is against these "dens," and the consumption of opium in any form upon the premises of licensed shops is not now permitted.

The evidence with regard to the effect of opium-smoking on health was less complete and less conclusive than that with regard to opium eating. Proof was given that smokers both of madak and chandu might continue the practice for 10, 20, or 30 years without detriment to their health. No organic disease of any kind was alleged to be producible by the habit. It was shown that opium-smoking was often resorted to for the relief of suffering, especially in cases of asthma, bronchitis, and pulmonary consumption, and that it was easy for unwary observers to mistake the effects of concurrent disease for the effects of opium-smoking. It cannot be said to have been adequately proved that moderate opium-smoking, taken by itself, and apart from its surroundings and from disease or semi-starvation, has a prejudicial effect on health.*

It is a matter of considerable scientific interest to know what the opium smoker really takes into his system. As regards madak smoking we have no positive information. Something, however, is known about chandu-smoking. Chandu is rich in the alkaloids of opium, and especially rich in morphia. These principles are, however, not volatilisable by heat; they are broken up and transformed by heat; and what the chandu-smoker receives into his lungs are the gaseous products evolved by the heated chandu, together with the carbonaceous particles which constitute the visible smoke.

Several Europeans have experimented in their own persons on chandu-smoking, and have recorded their experiences. Most of them report that they perceived no effects whatever, some suffered more or less from headache and giddiness, but none of the accounts I have seen report a distinctly hypnotic effect. Europeans are very sensitive to the hypnotic action of morphia, and their experience, even making allowance for their imperfect mastery of the art of chandu-smoking, seems to show that the enjoyment of the chandu smoker is not due to the absorption of unchanged morphia. That some traces of morphia are conveyed into the lungs of the chandu smoker is, however, pretty certain.† These traces would be carried up mechanically, in the solid form, entangled in the carbonaceous particles of the smoke. But as this smoke is forthwith expelled again there would probably be very little absorption of morphia by the pulmonary tissue.

What the gases evolved by heated chandu consist of we do not accurately know; they are doubtless very complex. But it may be presumed that their effect on the Eastern smoker is kindred, though not identical, with the reviving and exhilarating effect of solid opium on the opium eater. It may moreover be assumed that the reason why Europeans (with rare exceptions) do not experience this reviving effect from chandu-smoking is that they lack the proper constitutional susceptibility thereto, just as they equally lack, as before pointed out, the proper susceptibility to the reviving effect of the opium pill and opium draught.

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* The most detailed and circumstantial information, laid before the Commission, on the health of opium smokers in India, is to be found in a publication entitled:—"Lives of Bombay Opium Smokers," compiled by Mr. Rustomji Jehangir, Chief Inspector of the Bombay Opium Department. This little book contains short biographies of 222 opium smokers, of whom 60 were madak smokers, and 162 chandu smokers. These biographies are printed in full in the Proceedings of the Commission, Vol. IV., Appendix XXII.

† According to the observations of Moissan, made in the laboratory, the ripened chandu used by the better classes in China, yields its smoke at a comparatively low temperature, and he was able to detect the presence of morphia in the smoke, together with some volatile perfumes. The coarser chandu smoked by the lower classes, which is made with opium adulterated with the "dross" scraped from old chandu pipes, requires a higher temperature for the development of smoke, and this smoke contains toxic compounds such as pyrrol, acetone, pyridic and hydropyridic bases. (*Comptes Rendus de l'Académie des Sciences*, December 5, 1892.) These toxic compounds appear to be somewhat similar with those found in tobacco smoke.

## MEMORANDUM II;

## ON SOME HISTORICAL ASPECTS OF THE OPIUM QUESTION IN INDIA AND CHINA;

By Sir J. B. LYALL, G.C.I.E., K.C.S.I.

If the questions contained in the Order of reference are read in the light of the preamble and of the speech which the Prime Minister made in support of the amendment which embodies them, it will be evident that the replies must depend not upon the past history of the case in India and China, but upon facts and international relations now existing. Historical arguments have however, been much relied upon in this controversy, and have again been brought forward by some of the witnesses who have appeared before the Commission. The view which some of these witnesses take of the existing facts of the case, seems to be coloured by a view of its past history which, if true at all, is only partly true. Mr. R. M. Dane's two Notes which are appended to this Report, contain a large amount of authentic information, much of which does not seem to have been known to the writers, official or non-official, who have sketched the history of the question in the course of the controversy. None of these writers seem to have been thoroughly acquainted with both the Indian and the China sides of this history. In particular the writers on the China side have generally been ignorant of many Indian facts, and have not sufficiently recognised the necessity of considering Indian interests. It appears to me, that there are some important incidents of the history, upon which certain broad conclusions may be safely formed from a perusal of the authorities given by Mr. Dane. These conclusions are as follows:—

VII. App. B. and C., pp. 28 to 214.

1. The production of opium, the opium habit, and the export of opium to the Straits, China, and the Malay Archipelago, were all established facts in India before, and presumably long before, the first Europeans, the Portuguese, appeared on the scene at the very end of the 15th century. In China, also, before that time there was some home-grown, as well as Indian and Turkish, opium in use, and there are clear indications that the use was not medical only.

The common use of opium as a stimulant seems to have originated among the Mussulmans of Western Asia, probably in connexion with the strict prohibition of alcohol in their religion, and to have been extended by their power and influence to the Nations further East. This will explain the fact that the habit was established in Persia, India, and the Malay countries earlier than in China.

In the 16th, 17th, and 18th centuries the sea-traders of the different European Nations, which successively joined in the trade round the Cape, all took part in the traffic in Indian opium between India and other countries further East. But throughout this long period the Portuguese and Dutch had a much larger share of this particular trade than the other Europeans, and till close upon the end of it the share taken by British merchants was very small. The Portuguese and Dutch were both before the English in establishing trade relations with China: the Portuguese established their important trading settlement of Macao in 1537, a hundred years before the British made their first attempts to trade with China.

The habit of smoking opium was derived from the habit of smoking tobacco, which the Malays acquired from the Spaniards and Portuguese at the commencement of the 17th century. The Malays and Chinese by the end of that century had invented the opium-smoking habit, and by the year 1729 it had grown so common in some parts of China that it drew down an Imperial edict severely prohibiting opium-smoking shops, and the sale of opium for smoking purposes.

The above conclusions seem to rest securely upon admitted facts, and, if so, it is evident that some of the denunciations which have been used with great effect even lately by leaders of the anti-opium movement are entirely inaccurate and misleading. For example, it has been said that we created the opium trade to China, and then made war to maintain it, and that we did not find the vice in India, but created it to raise a revenue from it.

2. It has frequently been assumed that the edicts against import of opium issued by the Chinese Government were founded simply upon its experience of the great moral and physical injury caused by the habit; and this assumed fact has again been used as strong proof of the actual severity of the injury, and as a reason why Englishmen were morally bound to take no part direct or indirect in a trade which the Chinese Government made contraband on such high moral grounds.

There is no reason to doubt that Chinese views of religion and morality and of the injurious nature of the habit were the principal motives of the earlier edicts, but it would be contrary to fact to assume that the later edicts, and the strong action taken to enforce them, were elicited by these motives only.

The first edict of 1729 prohibited, not the import of opium, but opium-smoking taverns and the sale of opium for smoking purposes. It was issued with the sanction of an Emperor who had a high reputation for religion and morality, and was directed, like previous edicts against tobacco smoking, against a new habit which shocked Confucian ideas of propriety, and was thought to be very injurious. The edict of 1799, which was the first to directly prohibit import, is quoted at length by Mr. Dane. It is a very strong denunciation of the opium habit as morally and physically degrading, and as ruinously expensive. It appears to have been issued by the Governor of Canton: to have had some effect at Canton itself for a year or two; and then to have been neglected. As Mr. Dane says, at the end of his narrative, it was the exportation of sycee silver which actually induced the Chinese Government to exert itself earnestly to suppress the trade. Without that additional motive the interdict against opium would probably have remained, like the Imperial edicts against tobacco, "a luminous "manifestation of celestial benevolence." VII. p. 214.

The governing class in China held at that time, and, as is shown by the evidence procured for us lately from that country, often still hold, the idea which long prevailed in Europe that export of the precious metals meant national impoverishment. Whenever, as happened two or three times between 1799 and 1829, the high Chinese officials seemed to wake up to the fact that the import of opium was steadily increasing, and ought to be stopped, there is evidence which indicates that they were not thinking only of opium. It seems clear that the export of silver was always closely connected in their minds with the import of opium, and was apparently the reason which occupied the prominent position. There was an old law restricting Chinese commerce with foreigners to barter, but sometime between 1753 and 1799, the Chinese were prohibited from bartering goods for opium. In this way the drug became contraband, and had to be bought off the ships in a more or less surreptitious way; the Chinese had to smuggle silver out to smuggle opium in. Another reason for this connexion of ideas was that, as between India and China the balance of trade was always, in those times, in favour of India, though with other countries it was greatly in favour of China. About 1829, however, increased imports of all kinds, and of opium in particular, made the general balance of trade with all countries unfavourable to China for the first time in its history, and a real drain of silver began. The currency, which is in copper coin only, was depreciated, and this was much felt, particularly by the official classes. In 1832 a memorial from the Governor and Deputy Governor of Canton was sent to the Emperor, in which the drain of silver and import of opium were connected, and the legalisation of the opium trade was recommended for that and other reasons. Though this proposal received censure, a similar one was made in 1836 by a high official at Pekin, and by another Governor of Canton for the same reasons. (Papers of 1840.) In reply, in 1837 an Imperial decree was issued, announcing the Emperor's determination to remove the baneful effects of opium, the prevalence of which was leading to a daily decrease in China of fine silver. Finally, when, in 1839, the Special Commissioner Lin demanded surrender of the opium, he mentioned in his orders to the Hong merchants the immense loss of silver exported to pay for opium as the great evil of the trade. It is not surprising, therefore, that Englishmen concerned in the trade were generally disposed to hold the export of silver to be the fact which really led the Government of China from time to time to take action against the import of opium. With that motive they could not of course be expected to have sympathy. VII. p. 74. I. 1309. VII. p. 115.

3. The connexion of British merchants with the trade to China in Bengal opium began to be considerable, as we have already said, in the end of the 18th century. It followed the establishment of the East India Company's Bengal opium monopoly, which arose out of the conquest of Bengal and Behar in 1758. In 1773, Warren Hastings, as the Company's Governor General, was organising, after a time of confusion, a complete system of administration for these Provinces. He then found that, for a long time past, certain persons at Patna, supported more or less by authority, had held a monopoly of purchase of opium from poppy cultivators and petty dealers. Patna was the opium emporium of this part of India, the place from which the sea-traders, at this time principally Europeans, procured the drug, and they could practically only buy it from these monopolists. Here, as elsewhere, the cultivation was free, like that of any other crop, but the business of wholesale purchase and manufacture in the

tracts from which Patna drew its chief supplies, was practically a monopoly, though elsewhere in India that business seems also to have been always free. When the subject of the Patna opium trade came to be discussed by Warren Hastings and his Council in India, and by the Directors of the East India Company in England, the only question was between a State monopoly and free trade. Those who objected to a monopoly did so on the ground that it was unfair to the cultivators, as it diminished the price they could get, and was bad both for trade and agriculture, as with free trade production and export would increase. Warren Hastings and the majority of his Council decided on taking over this monopoly for the State, and their objects, judging from remarks made in various discussions in the Council, appear to have been the following: (1). To raise a revenue for the Company's Territorial Government. (2.) To keep the agents of the foreign European Companies and interlopers of British or other European nationalities from dealing directly with the poppy cultivators in the interior, as such direct dealings led to disorders and oppression, which the Administration was not strong enough to check. (3.) To keep up the quality of the drug, as free trade and competition were thought to lead to great adulteration by the cultivators. (4.) To have power to regulate or restrict internal consumption if necessary.

The monopoly was leased to a contractor, who had to deliver at Calcutta all the good opium he could collect, for which Government paid him at a low contract price. The opium was then sold, for export only, at public auction to the highest bidder. The Government, therefore, had only appropriated and monopolised the position and profits of the manufacturer. It had nothing to do with the export. It has sometimes been supposed that the British East India Company had previously been engaged on its commercial side in exporting opium to China, and that the monopoly was taken over to enable the Company to control and encourage the China trade. On the contrary, the Company was not exporting opium to China, and had no intention of engaging in that trade, and the measure was not adopted with special reference to the China opium trade. At this time the export of Bengal monopoly opium to Malay countries and elsewhere was still as great, if not greater, than that to China, and in dwelling on the importance to the trade of keeping up the quality of the drug, it is the fastidiousness of the Malay taste which is alone mentioned in the resolution. It seems probable that at this time opium had already began to be treated as contraband in China, but if so the fact does not seem to have been noticed in the discussion. It has been suggested that, an attempt ought to have been made by the Company's Government to prohibit purchasers exporting to China. But such an attempt would necessarily have been impracticable, for once on board ship and at sea the opium could not be prevented from going directly or indirectly to the best market. There was, in fact, no choice between total prohibition of export of Bengal monopoly opium and selling without reference to alleged destination. At that time our administration of Bengal and Behar was not strong, and the cultivation of the poppy was free: the idea of restricting it came later. The smuggling of opium was also rife in spite of the monopoly, and impossible to put down. The Company held only a small part of India in a precarious way, liable to internal revolt and attacks from outside enemies, European and Asiatic. From all the rest of India, in much of which opium was produced, the drug could find its way to a hundred ports beyond the Company's control. No sane person would then have suggested that such old industries as the cultivation of the poppy, and the opium export trade, in which many European and Asiatic nations, were interested, should be extinguished because the Chinese part of that trade was said to be treated as contraband by the Chinese Government.

The same arguments which induced Warren Hastings to prefer a monopoly again decided the question when Lord Cornwallis re-considered the matter, and again, when Sir John Shore changed Warren Hastings' contract monopoly into the State agency monopoly, which has since existed practically unchanged. State agency was found necessary, because the contract system had proved oppressive, and had almost ruined the industry.

The decision to take over the monopoly, and not to attempt to interfere with the destination of the opium exported, seems to have been a right decision, honestly adopted. The obloquy which, in the course of this controversy, has been sometimes attached to Warren Hastings and his immediate successors for the establishment of the system appears to have been due to imperfect knowledge of the subject. It is true that certain acts of Warren Hastings connected with the monopoly were made the subjects of articles in his impeachment, and in a vague manner this fact has been made to do service in attacking the system. But the charges were not that he had created the monopoly, but that in working it he had disregarded, for corrupt motives, certain instructions of the Directors. Of these charges he was fully acquitted.

4. It has been asserted that, even if the Government of India did not create the opium habit in India and the opium trade to China, it has extended both the one and the other, and that its sole policy has been to make as much revenue as possible out of the drug. The Government has also been charged with a policy of extending and encouraging the production of Malwa opium in the Native States for a similar object. These assertions seem to be clearly incorrect. There does not appear to be any good opening, down to the year 1830, for impugning, from an anti-opium point of view, the policy followed by the Government of India, in respect to opium. From 1830, its policy as regards the export trade changed, as will be explained later on.

The original policy adopted for working the Bengal monopoly was elaborated by Warren Hastings' immediate successors, and seems to have been as follows:—

(1.) To regulate internal consumption in a restrictive direction.

(2.) To confine cultivation of the poppy to certain tracts where soil and cultivators would produce the best quality, and where the collection of the raw opium could be carefully supervised.

(3.) To raise as large a revenue out of the export trade as could be got without materially increasing the supply at Calcutta.

As to (1.) some history of the regulations applying to internal consumption is given in the second Section of this Report. As to (2.), in 1799 a law was passed by which the cultivation of the poppy without a licence was prohibited. By force of this law the cultivation was extinguished at the beginning of this century in British districts generally, and only permitted in parts of Behar and Benares. As to (3.), we find that the number of chests of Bengal opium sold annually by auction at Calcutta in 1787, when statistics begin, till 1830, averaged about 4,000, and showed no tendency to increase till the last five years, though from 1801 the price realised rose immensely, and continued very high. From 1831, however, a large and sudden increase in the supply of Bengal opium began and continued, coupled with a tendency to fall in price. The fact is that, in 1830, the Government of India thought itself compelled to abandon its old policy of a small supply sold at a high price in favour of a larger supply at a cheaper rate. The reasons why it was led to this change of policy appear to be as follows:—The great and sudden rise of the price of Bengal opium, in 1801, must have been due to a decline in the supply of Malwa opium in the foreign markets. The violent civil wars between different Maratha leaders, which had for two or three previous years devastated the territories producing that opium, and thrown into confusion Gujerat and the other country on the Bombay Coast through which it reached the sea, must necessarily have caused such a decline. The attention of the Calcutta Government appears to have been in this and other ways directed to the previous effect of the competition of the Malwa drug, and when, by the war of 1803, the Company had acquired some littoral territory and great political influence on the Bombay side, the Bombay Government was directed to do its utmost to keep down and ultimately extinguish the trade in order to maintain the high price to which the Bengal drug had risen.

At this time the Company had no influence over the country where the bulk of the Malwa opium was produced, so, till 1820, the efforts to extinguish the trade (which are described in the third Section of this Report, and more fully in Mr. Dane's Memorandum) were directed to the establishment of a cordon to prevent the opium reaching the coast, and the enactment of laws to prevent British subjects or British ships having dealings with it. Though not very effective outside our own territory, which was then very small on the Bombay side, these efforts, aided by the continued confusion in the Malwa country, had considerable results, and the price of Bengal opium kept very high. After our war of 1818 against the Marathas, the position was changed, as the Malwa opium-producing countries came into political relations with our Government as allied and protected States. It was no longer possible to absolutely ignore their interests and their equitable claims.

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No one, therefore, at this time suggested that we should attempt to prohibit the production of exportable opium in these States, either by agreement or by compulsion. Neither course appears to have been considered open to discussion. Moreover, the Directors in England had always expressed much doubt of the fairness of the indirect measures already adopted against the trade, and had commented on the hardships caused by them to the agricultural and commercial classes concerned in this old industry. It was also known, by this time, that the trade could not be extinguished by any cordon we could establish, though it could be much crippled by it. The Malwa opium still found its way to the coast and Portuguese ports by smugglers' paths and the circuitous routes through Sindh. For all these reasons, and because it was foreseen that an increase in poppy cultivation must follow from the pacification of the

Malwa country and the high price of opium abroad, some new plan was seen to be necessary if the price of Bengal opium was to be kept up. The plan suggested was to monopolise the purchase of Malwa opium for export, and so get the whole supply of exportable Indian opium, Bengal and Malwa, under control, and command prices in the foreign market. The total export could be kept in this way no greater or even less than before, and though the commercial classes interested in the old private Malwa export trade might suffer, the injury to the Rulers of the Native States and their agriculturists would be alleviated.

It was first attempted to effect this by empowering Government agents in the Malwa country to purchase annually not more than 4,000 chests of opium. They were to buy it out of the produce likely to be exported, as being in excess of demand for internal consumption. As these agents, being unaffected by the cordon, could send what they bought safely and by easy routes to Bombay, while native purchasers could only get their opium to the coast by difficult and circuitous routes, it was thought that the Government agents would be able to outbid others and yet buy at moderate rates, and so establish a practical monopoly of the export trade. This plan, however, failed, as fondness for the trade and the high prices in the foreign market made the native dealers compete keenly, and extension of cultivation could not be checked. An attempt was then made to secure the same object by inducing the Native States concerned to enter into Treaties whereby the production in their States, for export and home consumption, should be limited to certain quantities, and the quantity for export should be sold to the Government of India at certain moderate prices. This plan was resisted by some of the States, and very unwillingly accepted by others. After making us very unpopular with the people and Princes of these States, it also had to be abandoned for reasons given at length in the third Section of the Report. In 1830, therefore, the Government of India reluctantly abandoned all idea of monopolising the export of Malwa opium in addition to that of Bengal, and established what is known as the transit duty system. To enforce this system they kept up the cordon as before, but allowed the Malwa drug to pass through it to Bombay for export by certain routes only on payment of a duty. The direct revenue obtained by this duty was only a secondary consideration: the main object of the system was to do what could still be done to keep up the price of Bengal opium by putting a duty on Malwa opium, and to regulate the passage of the latter drug to the sea, and so prevent its being smuggled wholesale into British territory. The Directors in England cordially agreed, when the matter came before them, that the change to the transit duty system was necessary; and in the final report of a Select Committee of the House of Commons, presented in 1832, the policy of the change was said to be beyond a doubt.

5. I think I have shown in the last paragraph that down to 1830 the policy of the Government of India was strongly restrictive in respect both to production of Bengal opium for the Calcutta export market and export of Malwa opium from the Bombay side. In that year the Government reconsidered the whole case, and appear to have decided that a change of policy was necessary, and to have come to the following conclusions: (1) That it was not possible to control the Malwa trade by a monopoly; (2) that with peace secured and no check but the transit duty (which at that time had necessarily to be put very low, as it could be evaded), the export of Malwa opium would steadily increase, and the price of Bengal opium go down in the foreign market; (3) that to prevent the possibility of the Bengal opium being driven out of the foreign market, and to make good the loss of revenue from the expected fall in its price, it was necessary to abandon the old policy of not increasing the supply of Bengal opium in the Calcutta market. The Government, in fact, made up their minds that in future the Calcutta export market must be allowed a supply which would enable it to compete favourably on commercial terms with the Bombay export market.

To carry this out they directed their Behar and Benares opium agents to invite applications to cultivate poppy in tracts and villages, other than those to which they had hitherto restricted it. The import of opium from the Native States of Oudh and Nepal, which had previously been absolutely prohibited, was also temporarily allowed for sale to Government only. In these ways the quantity of Bengal opium put up for export sale at Calcutta by Government was at once largely increased. It was almost at once double what it had been before, and four times as great in a few years; and from this time the quantity went on increasing rapidly in answer to a keen demand at high prices, though not so high as those which had ruled from 1801 to 1830. The export of Malwa opium also went on increasing, and for the next 15 years was about equal in quantity to that from Bengal. The steady rise in quantity was not checked

by Chinese edicts or even by war with China, and did not begin to abate till it was affected in 1854–55 by the great extension of poppy cultivation in China.

It is evident from what has been said above that the year 1830 was a most important epoch in the history of the Bengal monopoly. Whether the new working policy then adopted, of increasing the supply of Bengal opium in competition with the Malwa trade to the extent of the Calcutta export market demand was justifiable, is, no doubt, open to question. In defence of the Government of India, it must be first remembered that it was not even asserted at this time that any Government had used force against China in support of the trade. Nor can it be fairly assumed that that Government, which was familiar with the use of opium in India, had reason to consider the drug an article which must be regarded as a poison and on a different plane from other dangerous stimulants like alcohol, for example. Till 1868 opium could be sold at any village shop in England, and was so sold largely in the Fen districts. No doubt the Government of India was well aware that the increasing demand came from China, where the article was contraband, but down to 1830 the Chinese Government had shown little or no sign of anxiety to enforce the edict, and the merchants who took the drug to the China coast found an eager market, and had no difficulty in disposing of the drug to Chinese, who landed it with the connivance of Chinese officials.

The practice was, in fact, so different from the assumed law that the sincerity of the Chinese Government was generally doubted, and the matter was commonly regarded as, at most a dispute between it and the Chinese people, which they had to settle for themselves. Moreover, the Government of India was bound to carefully consider the interests of its Indian subjects, for whom it held in trust the revenue derived from the Bengal monopoly. If it lost that revenue by keeping down the supply of Bengal opium at Calcutta, and so preventing the Calcutta exporting merchants from competing with the Malwa trade, it would do British India harm, and, perhaps, not diminish the quantity of opium in China, as the supply of Malwa and Turkish or Persian opium was likely to increase in proportion. The demand in the interior of China was also known to be already met in part, at least, by home growth.

By increasing the supply in Calcutta the Government of India only did what private manufacturers would have done under the same circumstances, as a matter of course, if the business had been in their hands; they would have been guided simply by the demands in Calcutta, and would have declared themselves not responsible for what the exporting merchants did with the opium, or for what Chinese buyers and Chinese officials did in disobedience to the Government of China. Whether the Government of India, with the facts before it as they stood in 1830, was bound on moral grounds to act differently, seems not an easy question to answer with confidence. It had long before, for motives which then seemed good, appropriated the manufacture of an important product of British India as a State monopoly; having got—wisely or unwisely—into that position it was not free to disregard Indian interests and commercial considerations. If any of the self-governing Nations of the civilised world had found themselves in the same position, I think that the most they would have done would have been to abandon the monopoly, and set free the cultivation and manufacture by way of relieving their Government of direct responsibility. It is, perhaps, a pity that this was not done in India in 1830, but there were great difficulties in the way; and it would have been of no benefit to the Chinese Government's policy of exclusion, and certainly injurious to the Indian revenue, and to the power of regulating and restricting consumption in India. It must also be again pointed out that the whole export of opium was not to China, and that Bengal opium could only be prevented from going to China by stopping the whole export. Once on board ship the drug would go to the best market, which was China. Even if a law had been made prohibiting British subjects and British ships from taking it there, and a British preventive service had been organised on the China coast to enforce such a law, it would have only meant a transfer of the trade, at Calcutta or mid-way, to ships flying other flags. The Chinese Government was known to be as incapable of itself stopping Chinese smuggling along its coasts as it had been of stopping Chinese piracy. So long ago as the year 1633, the Chinese Government had to ask the Dutch to help them to put down Chinese pirates, and partly succeeded only with their help. In the present century such piracy has been checked almost entirely by our ships of war.

6. We now come to the consideration of the war between China and England of 1840–2, which is commonly called the opium war. It has been commonly asserted and believed that the cause of this war was on the part of the Government of China the wish to stop the trade in Indian opium, and on the part of the Government of England the wish to maintain it in the interests of the revenue of India. There will always be room for difference of opinion as to the degree to which the opium

trade was the cause of the war; no doubt in its double form of opium smuggled in and silver smuggled out the trade was a principal cause; but even in this double form I think that it was not the sole or even the main cause of the war on the side of China, and that it cannot be said, with any truth, that England went to war to maintain the opium trade.

The main cause, in my opinion, was the persistent, radical, and irreconcilable difference of view between British representatives and merchants on the one side, and the Chinese governing class on the other, as to the following matters:—The facilities of trade and conditions of residence in China properly demandable, the subjection of British subjects to Chinese law courts, and the proper extent and form of official or diplomatic relations.

From 1757 when the trade was confined to Canton, the policy of the Chinese Government was to allow our merchants to trade to that port, provided that the concession did not involve getting into relations with us other than commercial, and provided that we could be kept at arm's length in a submissive attitude, such as the Dutch adopted at Nagasaki till Japan was forced open, and the Portuguese at Macao.

It can easily be understood that apart from mere ordinary arrogance and dislike of foreigners, the Chinese governing classes had motives for their policy which were from the first not without reason, and which the experience of subsequent years did not seem to weaken. They knew what had happened, or was happening, to other countries like Japan, the Phillipines, India, Java, Sumatra, Ceylon, and Burmah, from intercourse with Europeans of different nationalities.

Rightly or wrongly the British merchants and their representatives resented the Chinese policy, and persistently kicked against the restrictions imposed.

VII. App. C. If the account of our relations with China from 1757 to 1840, given in Mr. Dane's Memorandum, and supported by extracts from authentic documents, be carefully read, it will be seen that there was all along constant friction; that the part thereof due to the contraband trade in opium was for a long time very trifling, and though great in the last two years, only secondary even then.

In point of arrogance of tone there was not much to choose between either side, but the high Chinese officials seem to have wished to be fair and accommodating, provided they could do it without relaxing their policy in essentials.

In the various controversies the Chinese seem to have been right in some and wrong in others, and there were cases in which neither party could be said to be in the wrong, such, for instance, as the frequent refusals of the British to make over British subjects charged with homicide to be tried by Chinese law and Chinese Courts.

With this increasing friction, British trade and power and pretensions also greatly increased as time went on.

VII. p. 98. As early as 1829 it is evident from an edict of the Emperor and the papers connected with it that the British were regarded as the most "fierce and unruly," and "proud and domineering" of all the foreigners, and that the Chinese Government was making up its mind that it would probably have before long to expel them from Canton, and put an end to their trade. The British demands which elicited this edict had nothing to do with opium, but the edict shows that the Emperor had that trade in mind, and consoled himself for the loss of duties which expulsion of the English would involve by reflecting that the stoppage of the drain of silver due to the opium trade, would be a good set off.

From this time to the end of 1838, the wish to check the opium trade and consequent drain of silver was no doubt one strong cause of the increasing tension which prevailed, but the main cause was the determination of the Chinese Government to maintain their exclusive policy, which determination was only confirmed by the efforts we made to force ourselves into closer and freer relations.

Down to 1834 the Chinese Government had hopes of maintaining their policy without violent measures. In that year the British Government abolished the East India Company's China monopoly, and the Supra-cargoes, its commercial representatives, and sent out diplomatic officers of much higher position under the name of Commissioners in China, with demands for direct diplomatic relations, and for new trade concessions. The Chinese Government rightly understood that this meant a decided step on our part to break down their policy. Naturally they assumed in reply a stiffer and more obstinate attitude than before. From this time till the end of 1838, though their action wavered as to maintaining prohibition of the opium trade, it never wavered as to their main point, our retention in the position in which they had from the first wished to keep us as regards commercial intercourse and diplomatic relations. Mr. Lay says in his Note that it was the claims we advanced as regards

diplomatic relations in 1834, and which Lord Palmerston again insisted upon in 1836, which were the real cause of war. Sir Thomas Wade in his evidence conveys much the same meaning in the reverse way, by saying that it was the refusal to grant proper diplomatic relations which made war inevitable. These are men experienced in dealing with the governing class in China, who have studied the history of those times on the spot. It seems evident that though China aimed her first blow in 1839 at the opium trade, that was not her main point. Being determined to resist our demands, which had nothing to do with opium, she saw that resort to force was inevitable, and that to boldly stick to her old policy and make no concessions was the safest course to adopt. Her hesitation as to treatment of the opium question therefore disappeared, and she undertook to put that trade down by force; partly no doubt as a measure she much desired to effect for its own sake, but also as a counter-move, and the one best suited in her opinion to bring our authorities and our merchants to their senses. We did not treat the violence to our representative and the whole British community at Canton by which China got possession of the opium as a cause of war; nor did we then advance a claim for compensation. It was not till a year later, when the Chinese had rejected all our overtures, declared all trade at an end, and fired on our ships, that we declared war. We went to war then not to uphold the contraband opium trade, but to dispute the right and power of China to expel us with insult and stop all trade. It may be noted that the same conclusion as to the main cause of the war was held by General Gordon, whose letter of 1882 to Mr. Boulger on the opium question has often been published. He wrote as a friend of China and an enemy of the opium trade, and his knowledge of Chinese Statesmen and indisputable honesty makes his evidence of much value. In that letter he said that "The opium wars were not about opium; opium was only a "cheval de bataille; it was against the introduction of foreigners, a political question," and the following quotation from a letter to the "Christian World" from Dr. Griffith John, a missionary of 35 years' standing, dated Hankow October 6th, 1891, is to much the same effect. It may be mentioned that in the last memorial to the Secretary of State for India, of the Society for the Suppression of the Opium Trade, this gentleman's arguments against opium are quoted at length, and he is stated to be one of the most competent and experienced observers of Chinese affairs. After discussing the prevalence of riotous assaults on missionaries, and saying that the root of the opposition experienced by them was to be found, not so much in the feelings of the people as in the anti-foreign policy and attitude of the governing and literary classes, he refers further on to the first war with China as follows:—

As to the hatred of the foreigners, missionaries included, among the literary and official classes, there can be no doubt in regard to it. But this hatred is not a thing of to-day. It existed long before the first Protestant missionary set his foot on the soil of the Celestial land. The hatred of the foreigner, be he missionary or be he layman, among the literary and official classes, is a deeply-rooted and fondly-cherished sentiment. Our first war with China is generally regarded in its relation to the opium trade, as springing out of this trade, and waged in order to obtain indemnity for the losses sustained by the surrender of the opium. But it may be justly regarded in another light, namely, in its relation to the immoderate assumptions of the Pekin Court, and the haughty, contemptuous, and insulting bearing of the Chinese officials in their intercourse with all foreigners from the beginning. The principle which guided them in their intercourse with foreigners is given in the following translation of one of the Chinese maxims:—

"The barbarians are like beasts, and not to be ruled by the same principles as the Chinese. Were any one to attempt to control them by the great laws of reason, it would lead to nothing but confusion. The ancient kings understood this well, and therefore ruled barbarians by misrule. Hence to rule barbarians by misrule is the true and best way of ruling."

It is perfectly clear that no beneficial results could possibly accrue from arguing with a people who could think, speak, and act in this way. While their extravagant pretensions remained unrepelled, all overtures on the part of a foreign Government would be rejected with disdain. No great Power, however, could possibly submit long to such insults and humiliations as England was called upon to submit to in the persons of her representatives; and hence war, apart altogether from the opium traffic, was inevitable sooner or later.

One other opinion to the same effect may be quoted from the evidence procured from China for the Commission through Her Majesty's Minister in China, and appended to our proceedings. The Reverend John Macintyre, missionary of the United Presbyterian Church, Scotland, who has resided for more than 20 years in China, and who thinks it would pay the British Government, even now, as a matter of policy, "to back out" of the opium trade, writes in para. 15 of his evidence, as follows:—"Merchants used to grumble that so much silver went out of the country." V. pp. 212 to 343.

"I never, at any time, believed it was a matter of morality with the Chinese. "It was a question of interfering with their fiscal arrangements." "I mean to say "I disbelieve the loud talk about morality in which Chinese statesmen have, from "time to time, indulged when they speak on the so-called opium war and the use "of opium. The opium war was a war in which the Chinaman fought to keep out "the foreigner as such. I regret that we took the opium with us. Had we dropped

" it then we should have had an unequalled position to-day in China. But the " opium was an accident of the war. Nothing but war could have brought the " Chinese of that day to acknowledge us as belonging to the *genus homo*, and not " only so, but as subjects of a free and independent Sovereign, and a power infinitely " superior to themselves. That to my mind was the subject of the war."

7. It has been argued that though the main cause of the war on the part of China was not opium, and though we did not go to war to maintain that trade, or demand that it should be legalized or tolerated as a condition of peace, yet after all the practical result of the war, was to force opium upon China by intimidating the Chinese Government from stopping the trade. The first answer to this is that the Chinese Government was never before or after the war capable of stopping the import of opium. It was capable of making a spasmodic effort at one place, and of temporarily stopping the trade there by burning of Chinese ships and boats, capital punishments and bastinado, and other such rough and violent measures, but the only result was that for the time, the foreign opium ships moved off to other points of the coast, and sold there to a fresh set of Chinese smugglers. It had no proper preventive service, no honest or active body of officials, and was not supported by any popular action in the matter; the Chinese Government, in fact, was always as incapable of stopping in any permanent way the smuggling in of opium as it was of stopping permanently the smoking of the drug in China.

To force opium upon the Chinese people in the simple sense of the words was, of course, always impossible. No foreign shipper of opium could have sold an ounce of opium on the coast of China if there had not been a Chinaman ready to buy. There were always Chinamen eager to buy at high prices, and at any risk. There is no doubt, however, that the view that a policy of non-interference with the import of opium had been practically forced upon the Chinese Government by the war became a popular belief among the Chinese after the war, and has been since held by many Englishmen and other foreigners, and is expressed, for example, in General Gordon's letter, from which I have quoted above. I think, however, that the evidence shows that this view, if true at all, is only true to a very limited degree. To the extent that after the war, as before the war, we refused to ourselves attempt to repress the contraband opium trade off the coasts, or in the inner waters of China, or to stop the export of Malwa and Bengal opium from India, it is true that we forced the trade on her, but not otherwise. It is, however, evident that the difficulties in the way of our undertaking to put down the trade, even in Indian opium only, were immense if not insurmountable. These difficulties have been described above in paragraph 5 of this section, in considering the arguments which may be used to excuse the increased production of Bengal opium after the year 1830. The only effectual way would have been to stop all export of Indian opium, which was no doubt physically possible after the annexation of Sindh in 1843. That is the measure now advocated by the Society for the Suppression of the Opium Trade, and the existing reasons for and against adopting it are considered in the Seventh Section of the Report.

That we did not in any other sense force toleration of the trade on China after the war, or attempt to hinder her from herself taking all legitimate measures for stopping it, seems proved from the Parliamentary Papers of 1840 and 1857, and from the text of the Treaties. Opium remained contraband, but the trade went on more vigorously than ever. Though strong action was taken by the British Government under the Treaty to attempt to confine all British trade, opium included, to open ports, and so limit the area which the Chinese had to guard, and though the British High Commissioner and British Consuls frequently sent information to the Chinese officials of European smuggling operations in the inner waters and suggested action, the Chinese officials remained inert. It is no doubt possible that the Chinese did not believe altogether in the honesty of our official attitude, and thought it dangerous to take strong measures against Europeans, but this is no good explanation of the fact that they were equally inert in acting against the native smugglers, boatmen, or merchants, and did nothing to prevent their transporting opium to the towns where it was openly sold. They failed in the same way to respond to the American Minister's suggestions, and consequently, as Mr. Reed stated in 1859, the clause in the American Treaty forbidding Americans from engaging in the opium trade was ineffective. In short, for some reason or other, for which the British Government does not seem responsible, the policy of the Chinese Government at this time was not to take action to stop the trade. Sir Henry Pottinger, the British Plenipotentiary, within a month after the execution of the Supplementary Treaty of the 8th October 1843, wrote as follows to Lord Aberdeen:

Elgin papers of 1859, p. 404.

"I cannot help thinking that everything has now been done that is possible, or that China can expect from us, to assist her objects in this respect; and it is further my duty to inform Her Majesty's Government that whatever may be the terms in which the trade in opium is spoken of in this and other official communications that are placed on record, I have the strongest causes for doubting whether even one in a hundred of the officers of the Chinese Government is at all disposed to check the trade;"

And Keying, who, after being Chinese Plenipotentiary with Sir Henry Pottinger, had become High Commissioner at Canton, recorded his opinion in 1844 that opium smokers were innumerable, and that it was impracticable to prohibit the habit.

The popular belief mentioned above that the Chinese Government was forced by the war of 1840–42 to tolerate the trade was greatly due to the fact, that by Article IV. of the Treaty it was obliged to compensate the owners of the opium destroyed by its orders in 1839. That article runs as follows: "The Emperor of China agrees to pay "the sum of 6,000,000 dollars as the value of the opium which was delivered up at "Canton in the month of March 1839, as a ransom for the lives of H.B.M. Superin- "tendent and subjects who had been imprisoned and threatened with death by the "Chinese high officials." Though the manner in which the delivery of the opium from the ships at Lintin was enforced put the Chinese Government in the wrong it is unfortunate that it was held necessary to compensate the owners, but it appears that the reason for this course was that Captain Elliot made a promise of indemnity to all owners, in or not in the power of the Chinese Government, to induce them to join in the surrender. The bill, therefore, had to be paid either by England or China, and in the circumstances the English people were not prepared to accept the liability.

8. It is admitted that our second war with China of 1856–58 had nothing to do with opium; the incident which was the immediate cause, and the preceding controversies which had led to extremely strained relations between the two Powers, were unconnected with this trade, which was going on smoothly. But the voluntary character of the legalisation of the opium trade by China which followed the war has been denied, and it has been asserted that we took advantage of her defeat to apply pressure which she could not resist. I think it can be shown that, though legalisation was suggested as it had been before, nothing of the nature of pressure was used, and that the measure was adopted because the Chinese Government recognised that as it was not in its power to stop the trade or check the habit, the wisest course was to regulate the trade and derive a revenue from taxing it. They must have known this after the first war, but as General Gordon suggests in his letter to Mr. Boulger already quoted, they appear to have been prevented from then changing their traditional policy towards the opium trade principally by pride and fear of loss of prestige in China. This consideration disappeared after the second war, for the Treaty which they were forced to agree to by that war contained conditions much more injurious in their opinion to the prestige and interests of China than a change of policy in regard to opium, and accompanied by no countervailing advantages of revenue. When therefore the revision of the tariff came to be discussed they, of their own accord, proposed to admit opium as a duty-paying article, and all the conditions they suggested were agreed to.

A short account of the negotiations which followed the hostilities of 1856–58 will establish the view here expressed.

In the instructions issued for the guidance of these negotiations to Lord Elgin by the British Government the points included in the demand to be made on the Chinese Government bore no reference to opium, but laid stress on the execution of the stipulations of the former Treaty as regards Canton, and on the necessity of obtaining recognition of the residence of an accredited Envoy at Peking or of his occasional visit to that city, with the right of corresponding direct with the high officials at the capital. In a supplementary letter of the same date, Lord Clarendon explained more fully the provisions regarding commerce which the Government considered desirable. The paragraph relating to opium runs as follows:— Elgin Papers, 1859, pp. 1–4. p. 5.

"It will be for your Excellency, when discussing commercial arrangements with any Chinese Plenipotentiaries, to ascertain whether the Government of China would revoke its prohibition of the opium trade, which the high officers of the Chinese Government never practically enforce. Whether the legalisation of the trade would tend to augment that trade may be doubtful, as it seems to be carried on to the full extent of the demand in China, with the sanction and connivance of the local authorities. But there would be obvious advantages in placing the trade upon a legal footing by the imposition of a duty, instead of its being carried on in the present irregular manner."

In approaching the Court of Peking after the operations against Canton, Lord Elgin gave prominence to the questions of access to Peking, the regulated circulation of foreigners in the Empire, and the advantages of relaxing the existing restriction of legal trade to a few ports, which had occasioned the rise of a large contraband. p. 182.

Elgin Papers, 1859, pp. 325–30. pp. 330–6. pp. 345–6. pp. 399–404.

The need of revising the tariff, owing to variations in the prices since 1843, and of suppressing illegal transit duties, was also pointed out, and, finally, the advisability was mentioned of ensuring better treatment of Christian missionaries, a point specified by Lord Clarendon as one which should, if possible, be gained. The letter met with no response, and the advance on Tientsin followed. In the negotiations that ended in the Treaty concluded at that place, the proposals regarding admission to Peking were alone prominent, though that of allowing foreigners to visit the interior on passports was accepted, but not for immediate execution. The Treaty itself did not deal with the tariff, but provision was made for the revision of that of 1843 through authority separately delegated by the two Powers.

The subject of opium was not mentioned in the Treaty, and was not even discussed by the Plenipotentiaries at Tientsin. Lord Elgin's dislike of the opium trade is well known; he has explained why he refrained from then introducing the subject in a letter to Mr. Reed, the American Minister, from which the following passage may be quoted:—

"Not because I questioned the advantages which would accrue from the legalisation of the trade, but because I could not reconcile it to my sense of right to urge the Imperial Government to abandon its traditional policy in this respect under the kind of pressure we were bringing to bear upon it at Tientsin."

The Treaty was signed on the 26th June 1858. The negotiations for the revision of the tariff began some time later, and were concluded on the 8th of November. The revised tariff arrangements were thus signed by Lord Elgin and the Chinese Commissioner five months after peace had been restored and the foreign armaments withdrawn from the Peiho. These facts, and the character of Lord Elgin and his strong views on the subject, are sufficient proof in themselves that the action of the Chinese in legalising opium was voluntary. As additional proof the testimony of Messrs. Lay and Oliphant, recorded in 1880, and quoted by the Government of India in their despatch of 1881, may be cited. Their evidence is of such value and importance that it is advisable to save the trouble of reference by quoting it here; Mr. Lay says:—

Times, 22nd Oct. 1880.

"All the negotiations at Tientsin passed through me. Not one word on either side was said about opium from first to last. The revision of the tariff and the adjustment of all questions affecting our trade were designedly left for after deliberation, and it was agreed that for that purpose the Chinese High Commissioner should meet Lord Elgin at Shanghai in the following winter. . . . . In the meantime the preparation of the tariff devolved upon me, at the desire of the Chinese no less than of Lord Elgin. When I came to opium I inquired what course they proposed to take in respect to it. The answer was 'we have resolved to 'put it into the tariff as *yang yoh* (foreign medicine).' I urged a moderate duty in view of the cost of collection, which was agreed to."

Mr. Oliphant's letter bears date three days later; he writes:—

Times, 25th Oct. 1880.

"I was appointed in 1858 Commissioner for the settlement of the trade and tariff regulations with China, and during my absence with Lord Elgin in Japan, Mr. Lay was charged to consider the details with the subordinate Chinese officials named for the purpose. On my return to Shanghai I went through the tariff elaborated by these gentlemen with the Commissioner appointed by the Chinese Government. When we came to the article opium, I informed the Commissioner that *I had received instructions from Lord Elgin not to insist on the insertion of the drug in the tariff, should the Chinese Government wish to omit it. This he declined to do.* I then proposed that the duty should be increased beyond the figure suggested in the tariff, but to this he objected, on the ground that it would increase the inducements to smuggling. . . . I trust that the delusion that the opium trade now existing with China was 'extorted' from that country by the British Ambassador may be finally dispelled."

China Papers, 5 of 1871, p. 432.

In Parliament and elsewhere certain words used by Sir Thomas Wade, in a despatch written from China in 1868, have been often quoted as proof, that, in spite of all evidence to the contrary, the legalisation of the opium trade was a concession extorted from China by force, against the conscience of the nation, and in defiance of the moral convictions of its educated men. If, however, the whole despatch is read, it will be seen that Sir Thomas Wade was referring to the concessions which we demanded from the Chinese Government as conditions of peace, and which were embodied in the Treaty of 26th June 1858, and specially to the liberties and protection conceded to missionaries and their converts, and the demand for embassies at Pekin. There was no party among the Chinese people in any way in favour of these concessions, and, rightly or wrongly, we distinctly extorted them by force from the Chinese Government: on the other hand, we made no such demand for the legalization of the opium trade, and if, after the Treaty of Peace was concluded, any suggestion in favour of such a measure was advanced from our side, the evidence shows that it must have been done informally and without the least pressure. The legalisation of the trade did not increase it, and unless it is assumed that the Chinese were able to stop the contraband trade, and likely to do so, it cannot be said that the measure was

profitable to our Government, or to the Indian revenue. It was the revenue of the Imperial Government of China that gained by it. Nor can it be assumed of the Chinese nation as a whole, or of the Chinese educated class, that there was no party in favour of the trade or its legalisation. The smoking habit pervaded all classes, and was particularly common among the official and educated class, and without the active aid of Chinese smugglers, merchants, and officials the contraband trade would, of course, have been an impossibility.

As another proof that the Chinese Government agreed to the measure of their own free will, it may be noted that Mr. Reed, the American Minister, after personal investigation of the case, fell in with Lord Elgin's view that the legalisation of the trade was the right course to adopt in the interest of China, and the American Government, therefore, promptly agreed to the new tariff. Yet, previously, the American Government had always shown a disposition to side with China against us in this and other matters.

The provisions regarding opium in the agreement of November 1858, made in the circumstances above mentioned, include the imposition of an import duty of 30 taels (about 10*l.*) per chest. It was a condition that whenever the drug was moved from the port of arrival it must be accompanied by Chinese alone. This was in order to prevent Europeans pushing the trade in the interior, and to keep it, when outside the areas of the foreign concessions or settlements of the open ports, entirely in Chinese hands, and fully subject to Chinese control.

For the same reason the passport system laid down in the main Treaty was not to be applicable to trade in opium; nor, again, were the restrictions placed on the limit of the Li-Kin, or transit duty, in the case of other goods extended to that article. Finally, at the revision of the tariff, which could be demanded by either party to the Treaty at intervals of 10 years, opium was to be exempted from the rules limiting increase of rates of import duty that applied to other merchandise.

Sir Thomas Wade informed the Commission that Lord Elgin was prepared to agree to any rate of duty, however high, so that the trade was regularised. The limit was obviously the point at which smuggling could again become profitable. The rate fixed was double that imposed on other merchandise, and as Mr. Oliphant's evidence quoted above shows, the Chinese Commissioner refused to put it higher on the ground that it would induce smuggling. This import duty, it must be remembered, only covered import to the foreign concessions at the open ports; on the opium leaving those concessions, the Chinese Government was free by the agreement to impose on it any rate of Li-Kin, or transit duty, it liked. There was no limit as regards opium, and no privilege of paying an extra half rate and getting a certificate freeing the parcel through all Li-Kin collectorates to destination. In both these respects opium was denied the privileges which were conceded to other goods. In fact, the Chinese Government under the tariff agreement which followed the Tientsin Treaty got all it asked for as regards opium, and was free if it liked to confine the drug to the foreign concessions by prohibitive rates of Li-Kin duty. It was too wise to make the attempt, as it knew that the drug would then be smuggled in from other directions, and that import duty, as well as Li-Kin duty, would be lost. I. 1301. 1327–29.

In short, the whole character of the provisions legalising the import of opium in the agreement of November 1858, is another proof that the arrangement was voluntary.

It was the wisest arrangement which the Chinese Government could make under the circumstances, and this is the opinion which was expressed by no less an authority than Mr. Gladstone in a speech made in 1870. Hansard 201, p. 516.

9. After the trade was legalised in 1858, questions about opium only appear in negotiations in connexion with the revision of the tariff, which either Government had the right to propose at certain intervals. In this way there were negotiations in 1868, and, again, at Chefoo in 1876. On the first occasion the Chinese Commissioners were apparently anxious that our Government should stop the trade altogether by prohibiting all export from India, but failing that, they had no wish to alter the arrangements made in 1858 for legalising the trade, and were satisfied with a moderate increase of the import duty. In considering the statements which Sir Rutherford Alcock and Sir Thomas Wade made in the course of the negotiations of 1868, it must be remembered that they were doing their best for China in opposition to the Indian officials, whose business it was to protect the interests of India. On the second occasion, in 1876, the policy of the Chinese Government seemed to have changed. Their Commissioners expressed no wish that the trade should be stopped, and seemed anxious to improve the system of collection and increase the revenue. Accordingly

they gladly accepted an arrangement proposed by Sir Thomas Wade, which was expressed in the Chefoo Convention as follows :—

"On opium, Sir Thomas Wade will move his Government to sanction an arrangement different from that affecting other imports. British merchants whose opium is brought into port will be obliged to have it taken cognizance of by the Customs and deposited in bond, either in a warehouse or receiving hulk, until such time as there is a sale for it. The importer will then pay the tariff duty upon it, and the purchasers the Li-Kin, in order to prevent the evasion of the duty. The amount of the Li-Kin to be collected will be decided by the different provincial Governments according to the circumstances of each."

The reasons why the Convention of 1868 was never ratified, and which long prevented the ratification of that of 1876, are fully explained in Sir Thomas Wade's evidence.

In the latter will be found a full account taken from a formal report recorded at the time, of an important interview which Sir Thomas Wade had at the Chinese Foreign Office, on 16th January 1881, with the Minister who was then virtually Foreign Minister of the Empire. Sir Thomas asked him what was the policy favoured by the central Government in respect to opium, native and foreign, pointing out that policies which seemed to be diametrically opposite were being followed in the different Provinces of the Empire. We quote in full the record of the reply to this question, and of the further conversation which passed, as it seems to throw much light upon the views which have been recently held by the Chinese Government.

"The Minister addressed replied that the question was not an easy one to answer. He did not think that the Central Government had gone so far as to formulate a policy at all. Speaking from a general point of view, however, he might say that if the habit of opium-smoking could be universally and at once abolished, the Chinese Government would be ready and willing to sacrifice the revenue that was at present derived from opium. All sensible men were nevertheless agreed that this was an impossibility. The habit of opium-smoking was beyond the reach of prohibition, and the idea was how to turn it to account. The only way in which it could be turned to account was by making it a source of revenue, and the revenue thus derived was indispensable. There were, moreover, so many other matters that needed reform before the opium question was taken in hand, that it might safely be said that the abolition of opium had not entered the minds of those entrusted with the government of the Empire. Sir T. Wade went on to say that many persons, notably the foreign missionaries in China, had been urging on the British Government through various channels the advisability and the equity of abandoning their connexion with opium. Suppose, for as yet it was a pure supposition, that the British Government were eventually to effect a gradual diminution of the opium trade from India, by limiting the import to an increasing degree, year by year, until the trade was abolished altogether, did the Minister think that such an arrangement would meet with the approval of the Chinese Government? The Minister addressed, who again protested that the question was a difficult one to answer, replied that in his opinion such a plan would be useless. As long as the habit existed, opium would be procured somehow, and if it did not come from India it would be procured elsewhere. Any serious attempt to check the evil must originate with individuals. As long as men wanted to smoke and insisted on smoking, they would smoke, and a spontaneous abandonment of the habit on the part of the people would regulate the supply. Nothing short of this would do any good, and philanthropic efforts to check the evil in the manner suggested by Sir T. Wade would affect the revenue only, without in any way reaching the root of the mischief."

China, 5 of 1885. (C.—4448.)
China, 3 of 1886. (C.—4735.)

The negotiations for the ratification of the arrangement in the Chefoo Convention regarding opium were later on transferred to London and conducted by the Secretary of State for Foreign Affairs and the Chinese Ministers at the Court of St. James. They were somewhat protracted, owing to the necessity, on the part of the latter, to refer certain points to Pekin, but were concluded in 1885, and the result embodied in an additional article to the Chefoo Convention. In the footnote* the text of all the

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* *Main Clauses of the Additional Article to the Chefoo Convention, ratified 18th July 1885.*

2. In lieu of the arrangement respecting opium proposed in clause 3 of Section III. of the Chefoo Agreement, it is agreed that foreign opium, when imported into China, shall be taken cognizance of by the Imperial Maritime Customs, and shall be deposited in bond, either in warehouses or receiving hulks which have been approved of by the Customs, and that it shall not be removed thence until there shall have been paid to the Customs the tariff duty of 30 taels per chest of 100 catties, and also a sum not exceeding 80 taels per like chest as Li-Kin.

3. It is agreed that the aforesaid import and Li-Kin duties having been paid, the owner shall be allowed to have the opium repacked in bond under the supervision of the Customs, and put into packages of such assorted sizes as he may select from such sizes as shall have been agreed upon by the Customs authorities and British Consul at the port of entry.

The Customs shall then, if required, issue gratuitously to the owner a transit certificate for each such package, or one for any number of packages, at the option of the owner.

Such certificate shall free the opium to which it applies from the imposition of any further tax or duty whilst in transport in the interior, provided that the package has not been opened, and that the Customs seals, marks, and numbers on the packages have not been effaced or tampered with.

Such certificates shall have validity only in the hands of Chinese subjects, and shall not entitle foreigners to convey or accompany any opium in which they may be interested into the interior.

5. The Chinese Government undertakes that when the packages shall have been opened at the place of consumption, the opium shall not be subjected to any tax or contribution, direct or indirect, other than or in excess of such tax or contribution as is or may hereafter be levied on native opium.

In the event of such tax or contribution being calculated *ad valorem*, the same rate, value for value, shall be assessed on foreign and native opium; and in ascertaining for this purpose the value of foreign opium, the amount paid on it for Li-Kin at the port of entry shall be deducted from its market value.

material clauses of the article is given. The Chinese Government obtained all the concessions it asked for, and the Secretary of State for India, in communicating the result to the Government of India, in his despatch No. 7, of 22nd January 1885, made the following remark:—"You will observe that the Chinese Minister's Memoranda of "March 12th, 1883, and of September 27th last, admit unreservedly that the "agreement now under negotiation is of the Chinese Government's own proposing, and "includes all that they desire." VII. p. 214.

10. The arrangement of 1885 works smoothly, and no notice of desire to terminate it, or to re-consider the opium question, has been received from China, though two opportunities have occurred. The Chinese Government has not been without encouragement to re-open the question. The Society for the Suppression of the Opium Trade has more than once addressed it direct, and urged it to act, and Sir James Fergusson, speaking on behalf of Her Majesty's Government in the House of Commons on the 10th April 1891, said, "The Chinese at any time may terminate the "Treaty on giving 12 months' notice, and to protect themselves they may increase "the duty to any extent they please, or they may exclude it altogether. This, I think "I may say, that if the Chinese Government thought proper to raise the duty to a "prohibitive extent, or shut out the article altogether, this country would not expend "1*l.* in powder and shot, or lose the life of a soldier in an attempt to force opium on "the Chinese." Hansard 352, p. 316.

The natural conclusion from the above brief account of the negotiations subsequent to 1868, is that there is no reason to believe that the Chinese Government at present wishes to re-open the settlement of questions connected with the opium trade attained in 1885, or that it would be afraid to take the initiative if it had the wish. This conclusion is also supported by the opinion given by Her Majesty's Minister at Peking, Mr. O'Conor, in a letter to the Commission, dated February 6th, 1894, which is in the Appendices. Sir Thomas Wade, and Mr. Lay, C.B., also express the same opinion in their notes and evidence. Nor do any of the unofficial witnesses, whose evidence has been sent to us from China, assert the belief that the Chinese Government wishes to move in the matter. V. p. 229.

J. B. LYALL.

February 25th, 1895.

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(*Footnote*—continued.)

6. It is agreed that the present Additional Article shall be considered as forming part of the Chefoo Agreement, and that it shall have the same force and validity as if it were inserted therein word for word.

It shall come into operation six months after its signature, provided the ratifications have then been exchanged, or if they have not, then on the date at which such exchange takes place.

7. The arrangement respecting opium contained in the present Additional Article shall remain binding for four years, after the expiration of which period either Government may at any time give 12 months' notice of its desire to terminate it, and such notice being given it shall terminate accordingly.

It is, however, agreed that the Government of Great Britain shall have the right to terminate the same at any time should the transit certificate be found not to confer on the opium complete exemption from all taxation whatsoever whilst being carried from the port of entry to the place of consumption in the interior.

In the event of the termination of the present Additional Article, the arrangement with regard to opium now in force under the Regulations attached to the Treaty of Tientsin shall revise.

8. The High Contracting Parties may, by common consent, adopt any modifications of the provisions of the present Additional Article which experience may show to be desirable.

## MEMORANDUM III.;

### By Mr. HARIDAS VEHARIDAS.

I am in some doubt as to how I can best put on record a few comparatively trifling particulars with regard to which I differ somewhat from the conclusions at which my colleagues have arrived, as I fear that any attempt on my part to dissect any portion of the Report and introduce into the body of it phrases expressing my own view, will not only spoil the harmony of thought and composition, but will, perhaps, not meet with the approval of my colleagues. I agree with almost all the decisions given on the chief points of reference. Thus, if the Right Honourable Chairman will permit me, I would venture to submit separately a few observations on those points where I think my own views require a little more elucidation.

2. Had the policy of the Government of India with regard to its relations with opium not been assailed from a moral point of view—had the people of India not been impressed with the idea that any reduction in the Indian revenue effected by the proposed abolition of the production and sale of opium would have to be met by fresh taxation—had they not been afraid that the inquiries by the Opium Commission would probably result in a further restriction to the supply and sale of opium which would deprive them of the privilege of conveniently using it in many ways;—and had a number of Christian Missionaries as well as a few others not been somehow or other strongly prejudiced against the use of opium except for purely and authoritatively medical purposes—I am confident that opium would have been shown before our Commission with greater justice to itself, as regards its capability of doing both good and harm, than what we have been able to learn of during our Inquiry. I believe it is fair to say that opium was introduced to us by both sides in a more or less exaggerated form with respect to its faults or otherwise.

3. Bearing this in mind, I should be disposed to pass over without too careful scrutiny the whole of the evidence which bears the marks of exaggeration, whether medical, military, or missionary. I would, on the other hand, lay great stress on the evidence given on behalf of the Native States, where opium is grown and also where it is not grown, and by the people in general, who have expressed their desire not to prohibit the production and sale of opium as proposed, and also their unwillingness to bear any tax to make up the loss in the Indian revenue that would be caused by the enforcement of the proposed prohibition of the product and sale of opium. So far as can be seen from the evidence before the Commission, the laudable endeavours of the disinterested and philanthropic associations at whose instance the Commission has been appointed have not been successful in making out a case against the use of opium in a manner that would necessitate such prohibition. But the evidence has shown us very conclusively that any further restriction against the use of opium would contribute towards the increase of the use of alcohol, which is admitted by all parties to be much more injurious and mischievous than opium, not to speak of its objectionable character in a majority of cases from a religious point of view. But it is greatly to be wondered at and regretted that this has not adequately drawn the attention of Government, inasmuch as they have adopted much more stringent measures against the use of opium than that of alcohol. For instance, it is illegal to sell or to keep more than from two to ten tolás of opium, while country liquors can be sold or kept up to a gallon without hitch or hindrance, and any quantity of European liquors can be imported as well as sold and kept even without a license. We have also evidence to show that the use of alcohol is spreading far and wide. It strikes the people of this country as unfair that before any attempt is made to relieve India from the effects of alcohol, which is comparatively a far more injurious and objectionable article, there should have been a movement, disinterested and sympathising as it is, to suppress the use, except for medical purposes, of a stuff like opium, which is admittedly far less harmful and objectionable so far as India is concerned. I would now leave it to the British people, noble-minded and sympathetic as they are, to see their way to adopting effective measures to check the exportation of European alcohol to India.

4. As regards the exportation of Indian opium to China. To abolish it would result in a great loss to Indian revenue. This loss the Indian people are unwilling and unable to make up by accepting the imposition of any additional tax. They have no voice to

check or reduce the expenditure made in India or in England to be borne by India, which is admittedly poor and already over-taxed, while its resources are constantly drained off to foreign countries without adequate and substantial return from them. It may also be mentioned that India is a dependency of England, while China is not that of India. Under these circumstances it cannot be for a moment imagined that those British people, who have disinterestedly taken up this cause for the good of India and China, would ever expect India, helpless as it is, to extend its generosity, at a great loss, towards China, in the manner proposed before the Commission. Again, viewing this point in another light, it is the Chinese Government that should take stringent measures against the importation of Indian opium, if it believes that it is either injured or ruined by accepting the drug from India. This it can well do now when it has been publicly announced before Parliament on behalf of the British Government that the Chinese Government are under no Treaty obligations to accept Indian opium, if they choose to refuse it. But if the Chinese Government, from past experience, still entertain any fears as to the *bonâ fide* carrying out of the authoritative announcement made before Parliament, I would suggest that an official communication might be sent from the British Government to the Chinese Government, informing the latter that any action on their part towards the stoppage of the importation of Indian opium into China, would be unhampered by the treaty obligations entered into by them with the British Government. I am, however, afraid China would not be prepared to do so, so long as it allows an extensive growth of opium on its own land, and also accepts importation of the drug from Turkey and Persia. Thus any attempt from outside for the benefit of China, would, if I have been able to see through the subject correctly, be ineffective, unless China takes the initiative in adopting the strictest measures, first against the cultivation of opium on its own land, and then gradually against the importation of the drug from foreign countries.

5. Though I am not prepared to agree altogether to the reasons stated in Section VII. of the Draft Report, in support of the Bengal Opium Monopoly, I feel inclined to acquiesce in its continuance so long as no better, or less objectionable, way of the manufacture and sale of opium has been brought to the notice of the Commission. But from the evidence before us I see reason to believe that the convenience and interests of the improvident and ignorant opium cultivators have suffered in the interests of the monopoly. The zeal of the officers engaged on the monopoly establishment, with some exceptions, appears to have been mostly directed to secure the interests of Government.

6. In addition to the recommendations made in the Draft Report therefore, I would propose that a general notification should be issued, and promulgated in such a manner as to make its contents fully and correctly known to the cultivators concerned, to the effect that they are not in any way bound to cultivate opium, that it is altogether optional for them whether to continue growing opium or to give it up, as it may suit them from time to time. It was objected to this during our Inquiry that such a notification would result in the decrease of opium cultivation, and consequently in a great loss to the opium revenue. But evidence was produced before the Commission to establish that the opium crop is the most paying of all other crops; and if that is the case, I fail to understand why fears should be entertained of a decrease in opium cultivation from any number of notifications of the tenor proposed. Such a notification would, in my humble opinion, be the only way of knowing the real wishes and convenience of the cultivators concerned as to growing opium. My proposal is based on the simple principle that when a cultivator pays fixed rent for his land, he ought to have, as a matter of right, full and unfettered discretion as to what kind of crop he should grow on the land. If any considerable number of cultivators within the opium monopoly district gave up the cultivation of opium, Government should either extend the limits of the territory now under the opium monopoly or find another part of the country where cultivators are willing to grow opium. But to make the cultivators of a particular part of the country grow opium against their wish is, as it were, to realise a revenue at their expense for the benefit of the rest of the British Indian subjects.

7. I am sorry to be unable to endorse the opinion expressed in Section VI. of the Draft Report as regards the Vaids and Hakims who practice in Brahmanic and Musalman methods of medicine. They are, I must admit, not surgeons, but very good physicians in their own way, and, so far as my own experience and knowledge go, not at all less careful in treating their patients than those practising according to European methods of medicine. These Vaids and Hakims, more or less, undergo a regular course of study in books of medicine which show the properties of different medical

stuffs, and describe the prescription and preparation of the same. These men may, in my humble opinion, be much more safely entrusted with dispensing opium than the common ignorant opium farmers or vendors under the present system. I am against the prohibition of the use of opium except for medical purposes, not because I think that no arrangement could be made to carry out prohibition, but because it appears to me to be neither desirable nor necessary that such a prohibition should be made under the present circumstances.

8. I think the system of local option against the free use of opium might be introduced in India as a tentative measure. The Government of His Highness the Gáekwád of Barodá has, of late, introduced this system in connexion with some undesirable caste customs. Government might legislate an enactment on this subject, and let those who choose to come under the law, apply for its enforcement, as was once the case for municipalities. Such an enactment would eventually lead to another —and a more beneficial one—for the check of the increasing use of alcohol.

9. As regards opium-smoking, I do not think orders such as have been already issued to check it will practically bring about the desired result. We have found from evidence that the practice of opium-smoking goes on all the same by simply arranging to be just beyond the technical scope of the restrictions made in such orders. The practice of opium-smoking is generally condemned; but nothing short of its abolition by law will, in my humble opinion, put an end to it. It is most desirable that it should be made penal. There were some cases before the Presidency magistrate of Bombay, where the accused were acquitted only because there were in a house, say, eight persons, and the quantity of opium used by them for smoking did not exceed the total of what each of them was allowed by law to possess. This is in my view plainly ridiculous. Under the present state of law, the opium-smokers can indulge in their vicious practice with impunity. To remove this difficulty a strict law should be made prohibiting opium-smoking in any form and under any circumstances, and thus frustrating the attempts of the lovers of opium-smoking as well as those interested in the opium trade to escape from its clutches.

10. Knowing as I do, as a Native of India, the feelings of the Natives in general regarding the habit of opium-smoking and its effects, I do not feel myself justified in entertaining any fears like those expressed in Section VI. As the evidence has shown that the habit of opium-smoking is confined to a very small number of people, and that it is disreputable, I feel the more convinced as to the necessity of prohibiting it by means of legislation, so that it may not gradually increase. This weighs with me so much that with every deference to the views expressed in para. 195, I feel constrained to differ from them.

11. I do not see why the practice of opium-smoking can not be made illegal when gambling has been so treated. I do not find in the Bombay Act No. IV. of 1887 any restriction as to the number; but a qualification is made as regards the place of gaming. Such a qualification I would propose to remove in the case of opium-smoking. This meets the objection raised at our private sitting in Bombay against the practicability of my above proposal.

12. With regard to the estimated loss the opium-producing States would suffer, should the cultivation of opium in those States be discontinued. I may be allowed to bring prominently to the notice of the Right Honourable Chairman and my colleagues that the States concerned submitted these figures showing roughly estimated loss only because they were asked to do so. But almost all of them asserted that they would not be willing to undertake the abolition of the cultivation of opium in their territories for any amount of compensation, unless they were forced by Imperial orders to do so. Under these circumstances there remains no question of compensation.

(Signed) HARIDAS VEHARIDAS.

Junagadh,
24th January 1895.

## ANNEXURE IV.

## MINUTE OF DISSENT, BY MR. HENRY J. WILSON, M.P., WITH NOTES AND APPENDIX.

1. As I am unable to concur in the report prepared by my colleagues, it is necessary that I should submit a statement of my own views upon the principal subjects of the inquiry. I desire to do so as briefly as possible.

2. The resolution of the House of Commons in pursuance of which the Commission was appointed was proposed by Mr. Gladstone, and carried by 184 to 105. The minority, consisting mainly of those who may be described, for brevity's sake, as the Anti-opium Party, desired the appointment of a Commission for a very different and more useful purpose than that which was finally recommended by the resolution of the House. NOTE A.

3. The 722 witnesses who appeared before us may be roughly divided into three classes, 191 who disapprove of the general use of opium, or are opposed for various reasons to the present opium system, or anti-opiumists; 487 more or less approving that system, or pro-opiumists; and 44 neutral or unclassified, including those who appeared purely for statistical or other evidence of a restricted character.

4. The anti-opiumist witnesses who were Natives of India were, generally speaking, not equal to the pro-opiumists in wealth and social position, but were not on that account less able to represent the habits and opinions of the great mass of their fellow-countrymen. This class includes a majority of the native journalists, lawyers, teachers and professors. Of qualified non-official native medical practitioners, a considerable majority were either anti-opiumists or somewhat undecided in their views. An enormous majority of the medical and other Christian missionaries who appeared before the Commission also gave anti-opium evidence.

The pro-opiumists, on the other hand, represented the great majority of the official classes, both European and Native, including military medical officers, together with many titled personages, landowners, and persons who considered that their financial interests were at stake.

5. A change appears to have come over official statements in reference to opium within the last few years. These were, until very recently, almost invariably condemnatory of the drug. Illustrations of this are given in the Notes, and it will suffice to make here one quotation only. On the 24th October 1817 the Directors of the East India Company, writing to the Governor-General, referred to their desire "to restrain the use of this pernicious drug," and went on to say, "were it possible to prevent the use of the drug altogether, "except strictly for the purpose of medicine, we would gladly do it in "compassion to mankind." NOTE B.

It will be seen from the evidence, some of which is hereafter referred to, that a very considerable body of officials now adopt a decidedly altered tone. No definite cause has been assigned for this change, but it is impossible to dissociate it from the financial difficulties of India, and from the pressure of the anti-opium movement in England having been increasingly associated with the discussion on the reduction of Indian expenditure.

### PRODUCTION OF OPIUM.

6. The production of opium in British India is not specially mentioned in the reference to the Commission, but it seems desirable to make some allusion to it.

So far as British India is concerned, the interest may be said to be almost confined to what is commonly known as the "Bengal Monopoly System,"*

* The "Bengal Monopoly System" provides 98 per cent. of the opium produced in British India. The remaining 2 per cent. is produced in the Punjab and Ajmere-Merwara. As to opium produced in the Native States, see pars. 42–47.

under which the cultivation of poppy is (for the convenience of surveillance) concentrated in two areas, known as the Behar Agency, with its head-quarters and factory at Patna, and the Benares Agency, with its head-quarters and factory at Ghazipur. The cultivation is by Act XIII. of 1857 restricted to cultivators who have received license to grow poppy.

Vol. II., p. 325.

On the average of the last three years (1890–1 to 1892–3), as to which returns were supplied, 243,605 acres of poppy were grown in the Behar Agency, and 229,574 acres in the Benares Agency, making together 473,179 acres.

Taking the average of the same three years, the licensed cultivators, numbering 1,247,941, delivered to the officials 78,944 maunds of opium, or about 57,995 cwts., for which they received Rs. 15,774,607, say, 854,457*l.*,* including certain advances made before sowing or delivery.

From these figures it will be found that the average cultivator delivered about 5·20 lbs. and received Rs. 12·64, say 13*s.* 8¼*d.** It is claimed that the cultivator is greatly benefited by getting an advance "without interest,' but this advance is under 6*s.* and for only part of the year, so that at 5 per cent. per annum the interest would amount to less than 2¼*d.* per cultivator.

5254–8, 10,807–8, 12,226, 12,963, 13,679, 19,535.

NOTE C.

*See* Note C.

Return, C. 3378, "Opium negotiations with China," 1882. Vol. II., 5300 to 5304.

7. It is said that there was a time when the poppy was a generally remunerative, and, therefore, popular crop. But it is certain from the correspondence which took place in 1881 between the Secretary of State and the Government of India, that it was not then by any means universally popular.

Vol. V., App. 1. NOTE D.

In 1883 a Commission was appointed to inquire into the administration of the Opium Department, and from official correspondence which arose out of the report of that Commission it is perfectly clear that in some districts many of the ryots were reluctant to undertake the cultivation of the poppy.

13,521 to 13,534.

The Commission of 1883 made numerous recommendations for improving the position of the poppy cultivator, but most of their recommendations have been neglected by the authorities.

2767, 6282, 10,909, 13,397, 11,362–3, 19,093. NOTE E.

There is still difficulty in obtaining the quantity of ground desired by the Government, and methods, which in India are called "persuasion" and in England compulsion, have to be resorted to.

The evidence showed that this compulsion is greater in the Behar than in the Benares Agency; it is natural, also, that it should be greater in the places where the poppy is least productive.

It is the duty of the zilladars, the lower officials of the Opium Department, who are distributed all over the opium districts, to induce the people to apply for licenses and advances and to bring them to the weighment places. Mr. Gregory called this "coolie driving" (a), and although he afterwards said it meant only to collect them (b), I fail to reconcile this kind of driving or collecting with anxiety on the part of the people to obtain the alleged privilege of cultivating (c).

(a) 13,457.

(b) 13,579.

(c) 2927, 3249, 19,343–4, 19,535–7, 10,795–6, 14,942, 19,126.

The most conclusive evidence on this subject is furnished by what has happened since the Commission left India. The Indian Revenue Department's Resolution No. 2208, 20th April 1894, comments on the decrease in the area of cultivation, giving among other reasons the competition of other crops, and states "that the price of opium paid to cultivators will have to be "increased in order to keep pace with the rise of prices of other produce." In accordance with this, the price paid to the cultivators has been raised 20 per cent., viz., from Rs. 5 to Rs. 6 per seer. This proceeding in the present condition of Indian finance is in curious and suggestive contrast with the official evidence presented to the Commission as to the profitable, and therefore popular, character of poppy cultivation.

(h) 2920, 19,181, 19,537.

8. The official witnesses denied that compulsion was practised (h). Mr. Forbes, who holds the important position of Commissioner of Patna, stated

* Here and elsewhere the value of the rupee has been taken at 1*s.* 1*d.* English.

(d) "as far as I know the cultivators grow it entirely of their own free will." He also said that the charge of compulsion had taken the officials by surprise (e). "The charge, in my opinion, arises entirely from the ignorance of the gentle- "men, who, no doubt in good faith have conceived an entirely mistaken idea "of the relations between ourselves and the inhabitants generally of the "country" (f).

(d) 10,829.
(e) 12,079, 5399.
(f) 12,156.

Yet at the same time he informed the Commission that, in consequence of a rumour from Calcutta only a week before, he had been making special inquiries into the allegations, and that in that short time he had heard of three cases, as to which he undertook to make further and strict inquiry (g).

(g) 12,079.

It appears from Lord Brassey's remark (Q. 12,081) that Mr. Forbes had already spoken to him on the subject, and it was dismissed at the time by Lord Brassey's statement to Mr. Forbes :—

"You have assured me that you will not allow the matter to be neglected, and that if there is anything wrong the man shall be punished."

The result of these inquiries has been communicated by Mr. Forbes since our return to England, and will be found in Appendix XXXII., Vol. V., a perusal of which, and of Note F., will show that a zilladar, or inferior officer of the Opium Department, was seriously implicated in one case, that Mr. Christian, sub-deputy opium agent of Shahabad, was compromised in two cases, and Mr. Skrine, who holds the important office of Collector of Bhagalpur, was guilty of direct interference and pressure for the purpose of promoting opium cultivation.

NOTE F.

There is no evidence that any official has been subjected to any censure or discipline.

9. Exactions of every kind are practised by the zilladars and other subordinate officials on the ryots. The Commission of 1883 reported, "Every "seer of opium which a cultivator delivers pays toll to the amlah (subordinate "official) and from every rupee which a cultivator receives a per-centage "is deducted for their benefit." It was admitted by official witnesses that illegal exactions have continued(c), that little attempt is made to detect them (d), and it is too plain from Mr. Wace's cautious answers, that even some European officials (e) are not altogether free from suspicion.

Report, 1883, par. 638

(c) 10,851, 12,336, 12,149.
(d) 12,325.
(e) 10,899, 10,901.

10. Cases were reported to us (f) showing that the officials of the Opium Department, not content with the severe law providing ample punishment for offences, take upon themselves to summarily destroy the crops of cultivators who have, or who are supposed to have, neglected to grow the full quantity of poppy for which they have taken advances. One very interesting and suggestive case of this kind, of which full particulars are given in the Notes, was proved beyond all doubt, and no attempt was made to disprove the others.

(f) 11,355–89. 12,396–454. 20,444.*

NOTE G.

Resolution of Revenue Department, No. 2208, of 20th April 1894, states that in nearly 70 per cent. of the cases of alleged infraction of the opium laws in the Aliganj Sub-Division in the year 1892–3, "departmental "punishment was inflicted on the offenders, who were all opium cultivators, "instead of sending them up to the criminal court." If this means that cultivators have been summarily punished as in one of the cases above referred to, it is much to be regretted that the Government of Bengal should, since the Commission left India, have expressed its approval of "the course "adopted in the Aliganj Sub-Agency of punishing opium cultivators "departmentally."

## Compensation on Termination of Poppy Cultivation.

11. Some of the Government witnesses (a) as well as persons financially interested (b) suggested that if the Bengal monopoly system should be terminated, compensation ought to be paid to the zemindars and ryots. It has become common to speak of "prohibition" in connexion with this matter, but it must be remembered that prohibition has already been enacted by the

(a) 2080, 5254, 14,398, 26,832.
(b) 14,441, 13,943–60.

* The petition, which is not printed, alleges that part of a wheat-field was "unsowed" by officials of the Opium Department.

(c) Vol. II., pp. 527 and 531. 2943.

Opium Acts of 1857 and 1878 (c), and cultivation is punishable except in the case of persons duly provided with annual licenses under stringent conditions.

Cultivation has been terminated through the greater part of British India by general prohibitory enactment. It has also been terminated frequently and extensively simply by the non-issue of licenses. This course has sometimes been adopted, wholesale, in a given locality for the purpose of "facilitating excise" (c), or because it is "unremunerative to the Department." (d) This termination by the non-issue of licenses has also been continually practised when the accumulation of reserve stock, the falling off of the export trade, or other reasons, rendered such a course desirable in the interests of Government.(e)

(c) 19,117, 14,932.
(d) 19,109.

(e) 2943 and 3019.

In none of these different cases has any compensation whatever been made by Government either to the zemindars or to the ryots.(f)

(f) 3020, 2122, 13,754, 19,153, 14,938, 5775.

12. It was also contended by some witnesses that termination of poppy cultivation must needs be accompanied by reduction both of land revenue (g) and of rents payable by the ryots. (h) But repeated questions failed to elicit evidence of a single case of reduction of rent, (i) and only one instance was laid before us (so far as I know) in which a reduction of land revenue (k) was said to be consequent on termination of poppy cultivation. In this solitary case the reduction was not made till after the lapse of some 14 years, during which period many other causes may have affected the assessment.

(g) 13,694, 17,869.
(h) 5333, 10,821, 6095.
(i) 5306–9, 6130, 5569, 6172, 8514–5, 14,371.
(k) Vol. IV., p. 512, par. 19.

## Conflicting Policies.

2086. Hansard, Vol. 352, p. 343.

13. In the opium debate in the House of Commons, on the 10th April 1891, the late Mr. W. H. Smith, the then Leader of the House, stated, "the course "which this Government has taken, and which all Governments have taken "during the last few years . . . has been to diminish the area of cultivation "in India;" and Sir James Fergusson, speaking on behalf of the India Office,

2088. Hansard, Vol. 352, p. 323.

said: "I freely admit that the Government of India have never denied that "it would be very desirable that this source of revenue should be altered. "They have taken means to reduce it. They have diminished the number of "licenses, and they diminished the area on which the poppy was grown. One "million acres * less are now under poppy in Bengal than 10 years ago."

Sir David Barbour, Finance Member of the Governor-General's Council, having had his attention called to these utterances, said in reference to

2086.

Mr. Smith's statements: "I should hardly say that he is speaking there of "the policy of the Government of India. I should say he was speaking of "the policy of the Home Government, and, I must say, I was not aware "until that statement was made that it was the policy of the Home Govern-

2077.

"ment." He also said: "As regards the export of opium from Bengal, the "policy has been for some time to sell about the same amount every year, "neither diminishing that amount nor increasing it. This means, of course, "that the average area under cultivation would remain about the same, "rising or falling a little according to circumstances." In reply to other

2087.

questions he said: "It is not to be wondered at that members of the "Government at home should not be perfectly informed of the facts. . . .

2089.

"I believe that on various occasions inaccurate impressions have been "conveyed to" the House of Commons.

From this it will be seen that the important statements made by Ministers in the debate in question were entirely erroneous as to the policy really being pursued. They were also erroneous as to the actual facts. The average area under cultivation for the decade ending 1862–3 was 358,153 acres; 1872–3, 475,048 acres; 1882–3, 518,625 acres; and for 1892–3, 512,663 acres.

The resolution proposed by Mr. Gladstone and adopted by the House of Commons on the 30th June 1893 was based upon the same kind of erroneous information, because it pressed "on the Government of India to continue

* Hansard gives "one million acres," which is evidently a mistake. Other reports give 100,000.

" their policy of greatly diminishing the cultivation of the poppy, and the " production and sale of opium." Two different Ministries, and two different Parliaments, were entirely misled as to the action of the Government of India.

## The principal Purpose for which Opium is produced in British India.

14. The main purpose of the production and sale of opium in British India unquestionably is to supply the Chinese and other Eastern markets.

The average production of opium in British India during the last three years as to which returns were supplied was 54,707 cwts., of which 49,512 cwts., or 90·5 per cent., was " intended for export to China and the Straits Settlements, " technically known as *provision* opium " ; the remainder " intended for con- " sumption in India, technically known as *excise* opium," was 5,195 cwts., or 9·5 per cent. Of that which is exported to the Straits Settlements, a large proportion is re-shipped to China. Practically the whole of the Government opium thus sent to China and other Eastern countries is used for the purpose of smoking. That this practice of smoking is in the highest degree prejudicial, morally and physically, to those who indulge in it is established beyond all reasonable doubt. Vol. II., p. 345, pars. 6-7.

15. English officials resident in China and the far East have for the last 100 years continuously referred to opium smoking as a cause of moral and physical destruction. (*See* Note H.) NOTE H.

The Chinese Government and Chinese officials have used similar, or even stronger language. (*See* Note J.) NOTE J.

From the time when the earliest Christian missionaries became acquainted with the habits of the Chinese, down to the present year, they have persistently borne testimony to the same deplorable facts. (*See* Note K.) NOTE K.

The oral[a]) and written[b]) evidence presented to the Commission is overwhelming in its force against the opium habit in China. Sir Thomas Wade[c]) who said that " the treatment of the question by the Anti-opium Association " engages me on the other side " said also at the same time " no man who has " lived the time that I have in China, and who has been in contact with Chinese " of all kinds, can deny that the excessive use of opium in that country is an " exceeding misfortune to that country." Such extenuating evidence as reached us is mainly negative in its character, and vague in its terms. The evidence of medical missionaries (Dr. Maxwell, Rev. Hudson Taylor, M.R.C.S., and others), after years of daily contact with the people, was not only definite and specific, but is in the main confirmed by the written opinions of other medical men received by the Commission. The majority of the English officials in China who sent answers to the questions agree in this condemnation. One of the questions sent was whether, if the Indian opium supply was stopped, the people would take to alcohol. The replies, in the proportion of about 40 to 6, are that it would not have this effect.

[a]) 165, 214, 287 380, 430, 450, 498, 549, 609, 639, 673, 751, 790, 825, 1509, 1638, 1863, 1961.
[b]) Vol. V., pp. 212-343.
[c]) 1285.

It would occupy too much space to refer at length to the consular, missionary, and other evidence from China, which will be found in Vol. V., App. XXVI., but it is abundantly manifest that opium in China is a gigantic national evil. 214, 380.

16. It is, therefore, impossible to avoid the conclusion that it is altogether unworthy for a great dependency of the British Empire to be thus engaged in a traffic which produces such widespread misery and disaster. It is known that the cultivation of opium is now largely carried on in China, with the connivance, if not the express permission of the authorities, and without throwing any doubt on the sincerity of the desire of Chinese statesmen to rid their country of the blight of opium, it is impossible to say, especially in the present condition of the Chinese Empire, whether the cessation of importation of Indian opium would be accompanied or followed by any serious attempt on the part of the Chinese Government to exclude opium from other sources, and to prohibit its cultivation within the limits of their own empire. But however that may be, a traffic which is contrary to the principles of humanity cannot be justified on the ground that, if we do not engage in it, it will fall into the hands of others who have no such scruples. Q. 11

17. The effects of the consumption of opium in the Straits Settlements and other places in the east are substantially the same as already described in the case of China. A similar objection, therefore, exists to its production and sale for these other localities and nationalities.

18. The result of careful consideration of this part of the subject is that in my opinion the opium trade with China and the far East should be prohibited.

19. Sir James Fergusson, speaking as Under Secretary for Foreign Affairs on behalf of the Government, declared on the 10th April 1891, in the House of Commons, that—

Hansard, Vol. 352, p. 316.

"The Chinese at any time may terminate the treaty on giving 12 months' notice, and to protect "themselves they may increase the duty to any extent they please, or they may exclude it "altogether. This, I think I may say, that if the Chinese Government thought proper to raise the "duty to a prohibitive extent, or shut out the article altogether, this country would not expend "one pound in powder and shot or lose the life of a soldier in an attempt to force opium upon the "Chinese."

Vol. I., App. IV.

Exception was taken to the accuracy of the first part of this statement by some of the witnesses opposed to the trade. A memorandum from the Foreign Office shows that Sir James Fergusson was mistaken in saying that China could free herself from all treaty obligations in the matter by giving 12 months' notice. The remainder of Sir James Fergusson's statement is sufficiently explicit as regards the policy of Her Majesty's Ministers at the time, but it is very important that the British Government should make a definite declaration in that sense to the Chinese Government.

### The Consumption of Opium in British India.

(a) 26,040, 21,116, 25,903.
(b) 26,060, 20,323.
(c) 26,040, 26,802.
(d) 20,212, 20,323.
(e) 13,480–4, 26,040, 27,389.
(f) 26,060.
(g) 4512.

20. Opium is consumed in three ways (a); —I. By eating (b) in the form of small portions, or pills; II. By drinking decoctions of the crude drug, known as *kasumba* (c) and *amal pani*; or an infusion of poppy heads, or capsules called *post* (d); III. By smoking preparations of opium, known as *chandu* (e) (the Chinese form) and *madat*, or *madak* (f), or *gooli* (g). The first method (eating, or more correctly, swallowing) is that by which far the greatest quantity of opium is consumed.

The evidence laid before us as to the prevalence of the opium habit was very contradictory. Many witnesses, including some of the most important officials, gave evidence which tended to show that the habitual use of opium is widely prevalent amonst the various populations. This view was urged upon us by repeated statements that the consumption is so necessary to the happiness, well being, and even life of the people that it would be impossible to contemplate prohibition, or even any serious increase of restriction of the supply, because the result would not improbably be such general discontent as would amount to serious political danger. (*See* Note L.)

NOTE L.

Evidence of a directly contradictory character was given by many other witnesses, including a considerable proportion of natives of India, who may reasonably be supposed to be better acquainted with the habits of their relations, friends, and neighbours than officials, and especially highly placed officials, can possibly be. In order to arrive at some conclusion upon this conflicting testimony, it will be convenient to form some opinion as to what may be considered an average consumer's daily dose, and then to examine the actual statistics of consumption.

NOTE M.

21. The particulars given in the Notes show that the average quantity taken daily by each adult male consumer is about 20 grains. Taking this in conjunction with the evidence of many Government witnesses as to the very wide prevalence of the habit, the impression conveyed to the mind must be that there is a consumption far in excess of anything that is shown by the actual statistics.

NOTE N.

An examination of the statistics for each province shows that in Assam, where the consumption is largest, the quantity of opium issued is only sufficient to supply 20 grains daily to one person out of 52 of the entire population, while in the province of Madras, at the other end of the scale, the supply is only sufficient for one person out of 521 of the population.

NOTE O.

But greatly as the provinces differ from each other, various localities in these provinces differ still more widely, for while in Calcutta the consumption is equal to 20 grains daily for one person out of 26, in Tippera it will only provide the same quantity for one person out of 8,588.

It is clear from the Notes above referred to, and from the evidence on which they are founded, that the popular ideas which seem to prevail among Europeans in India are entirely irreconcileable with the actual facts.

Even if it could be shown that the average consumption of individuals is less than 20 grains, the argument is not materially affected. Moreover in these calculations no allowance is made for legitimate medical use, nor for the practice which is said to prevail of giving opium to animals. Vol. V., p 127. 20,323.

### Use of Opium by the Troops.

22. A general impression has prevailed, and important witnesses ([a]) gave evidence as to the general use of opium by the native troops, and especially by the Sikhs. The evidence taken in India shows this to be a delusion. Major-General Sir Robert Low, K.C.B., in command of the Oudh District, stated ([b]) that the highest number of opium-eaters reported in any one regiment under his command was 20; in the Ghoorka regiment only two consumers; and in another, none. Evidence was given by other military witnesses as to the consumption of opium by Sikhs in 12 corps. As to two of these,([c]) it was stated that opium was consumed by all. In two cases([d]) the proportion appears to average about 33 per cent. In eight cases([e]) the proportion varied from 1·3 per cent. to 6·5 per cent., or an average of 3·1 per cent. Colonel Jamieson, although a decided pro-opiumist, admitted([f]) that the Rajputs in his regiment, as a rule, do not take opium. Official information([g]) shows that while 23 regiments, including two Sikh regiments, made no arrangements for the supply of opium while on service, 3 lbs. were taken by the 23rd Bengal Infantry as sufficient for two years, and small quantities taken by the 32nd Bengal Infantry and the 3rd Sikh Infantry were brought back untouched.

([a]) 872, 1559.

([b]) 14,110-2.

([c]) 14,117, 18,641.
([d]) 18,688, 17,017.
([e]) 18,704, 14,147, 15,751, 19,853, 17,059, 16,943, 7108, 17,017.
([f]) 14,163.

([g]) Vol. II., p. 453.

### No Analogy between Alcohol in England and Opium in India.

23. In whatever way the statistics are looked at, they show that there are in India vast tracts where a mere fraction of the population are consumers of opium. In England, on the other hand, the great majority of the people are more or less consumers of alcohol. Any attempt therefore to treat the case as analogous is entirely fallacious; in the one case we have a nation of consumers, in the other a nation of abstainers.

### Purposes for which Opium is consumed.

24. It may be plainly stated at the outset that there is a general consensus of native opinion ([a]) in almost all parts of India against the habitual use of opium by the healthy and able bodied.

([a]) 13,336, 17,513-4 18,836, 20,133, and 24,937, 28,061, many others.

25. The importance of opium, as a remedy in certain diseases, has never been disputed. It is daily used in many parts of India, not only for specific ailments, for which it would be prescribed by European practitioners, but in many other cases, with the object of relieving pain, although it may have no permanent effect on the cause of the pain. The theory was advanced by some witnesses ([b]) that the habitual use of opium for non-medical purposes must have originated in the case of each consumer for the purpose of repressing some positive ailment, or to avoid disease which climatic or other conditions render probable. In accordance with this theory evidence was given before us ([c]) as to the belief of the natives, in many malarious districts, that opium is a prophylactic against fever, and that such belief was shared by many Europeans, ([d]) principally military medical officers. On the other hand, this view was strongly controverted by other witnesses, ([e]) including medical practitioners, both European and Native, who disputed the value of opium as a prophylactic against malarial fever, or as a remedy in the disease, and as regards many parts of India there was no such belief amongst the natives. ([f]) It was clearly established by the evidence that the habit of consuming opium is practised by a certain portion of the inhabitants in many parts of India for purposes which have no relation to the actual presence or even fear of disease. Many men begin the consumption of opium at about the age of 40, ([g]) under the impression that the system is stimulated and the declining bodily

([b]) 13,089, 17,283, 28,107, 21,878, 2147, 1992, and many others.

([c]) 3657, 19,528, 25,583, 27,574.

([d]) 2188, 3404, 3606, 21,901-2, 28,141, 9516-7.

([e]) 4710-5, 13,116, 5887, 16,558, 16,902, 16,903, and many others.

([f]) 8542, 4280, 9132, 9852, 1[illegible]82 3, 18[illegible]95, and many others.

([g]) 3544, 12,578, 4000, 25,951, and many others.

powers preserved by its use. Under these circumstances, it does not appear to incur popular disapproval.

26. There is a special and licentious purpose for which opium is taken, and when it is habitually used by young and healthy men it is usually for this purpose, which is universally reprobated as vicious and degrading. (*See* Note P.)

NOTE P.

27. Opium is in some districts frequently taken by persons requiring to make special or unusual exertion ([h]) in enterprises involving fatigue and exposure, while others entirely deny that any advantage is derived from such use, ([i]) and on the contrary maintain that the stimulation which it affords is merely temporary and delusive. This idea as to the benefit of opium under such conditions is similar to the belief which formerly prevailed in England as to the use of alcohol in the like circumstances, but which the experience obtained in Arctic and other arduous enterprises has now proved to be delusive.

([h]) 10,038, 15,762, 19,192, 20,990.
([i]) 8596–9, 8612, 9848, 18,253, 19,029, 23,457, and many others.

28. The drug is also used in some provinces and castes as a mark of friendship and hospitality in connexion with family and social ceremonies.

20,982, 21,577, 23,656, 24,659.

29. To infants from the time of birth until they are three or four years of age opium in minute doses is habitually given in many parts of India, ([k]) partly with the impression that it protects them against disease, but chiefly in order to keep them quiet, and prevent them from crying in the absence of the mothers when engaged in household or field work.

([k]) 23,104, 25,867, 13,994, 15,672, 11,808, 3502, and many others.

This practice is defended ([a]) in general terms by several witnesses, and strongly condemned ([b]) by many who are specific in their enumeration of the evils which follow. The best excuses offered are the poverty and the ignorance of the parents.

([a]) 16,266, 21,577. 23,261, 25,876.
([b]) 16,902, 21,298, 23,491*a*, 26,619, 25,894.

In Bombay there is an extensive use of Bala Gooli, ([l]) that is pills made of opium mixed with other drugs and spices for the use of children. This is at present carried on under the sanction of the authorities, which in my opinion should be withheld.

([l]) 24,671, 25,865, 26,674.
Vol. IV., p. 498.

30. The practice of drinking the decoctions or infusions of opium, already alluded to, is somewhat restricted. It appears to be mainly confined to Rajputana and the Punjaub, and to be chiefly associated with social and ceremonial observances. ([m]) There is some evidence that this use is declining. ([n])

([m]) 16,231, 20,990, 21,987.
([n]) 22,776, 23,750, 26,429.

## Smoking Opium.

31. The smoking of chandu and madak is usually a social ([a]), as distinguished from a personal, habit, and appears to be principally confined to the cities and large towns ([b]). It is almost universally admitted to be injurious and demoralising, is practised by the vicious and degraded ([c]), and is generally reprobated ([d]).

([a]) 3510, 16,546.
([b]) 16,766–7, 28,082, 18,564, 27,065.
([c]) 27,388, 3843, 15,698, 19,527, 16,012, 17,705.
([d]) 27,467, 20,698, 11,858, 21,870, 21,812.

In view of the evils attending the habit, smoking on licensed premises was forbidden throughout British India ([e]) on the 25th September 1891.

([e]) Vol. II., p. 396.

Evidence was given that smoking clubs, so-called (though without any pretence of paid membership), existed before the issue of this prohibition, and have multiplied since. Very little effort had apparently been made to suppress them. There appears to be no reason why the authorities should not have taken steps to acquire any further powers which were needed for this purpose as they were invited to do by the Home Government.

5008, 15,170–72, 16,684–709, 26,948.
Secretary of State's letter, Vol. II., p. 396.

Three missionaries and a newspaper editor at Bombay having exposed certain incidents connected with the sale of opium were proceeded against for defamation by the manager of the opium farmer in that city. At one of the trials which took place after we left India, Mr. Cooper, the presiding magistrate, stated in his judgment, "it is admitted that during the last "Mahim fair there were five or six of these clubs opened at Mahim, and "the statement in the article regarding the mismanagement of these "clubs appears to be true." In the course of these proceedings, the following remarkable evidence was given by the chief opium inspector at Bombay :— "There are about 150 clubs at Bombay. . . . I do not think the opium-

"smoking clubs at Bombay and at Mahim are undesirable. . . . I do "not think the opium-smoking establishments should be shut up, therefore "we have not tried to shut them up." It is noticeable that since the imprisonment of the missionaries the opium officials at Bombay have instituted proceedings against several of these so-called clubs, and have obtained convictions against them.

The question of dealing with unlicensed opium-smoking clubs in India has been compared to that of preventing illegal sales of alcohol in clubs in England. There is this important difference, that the question in England is how to prevent the consumption in unlicensed places of beverages which are not disapproved by public opinion generally. In India it is a question of stopping a practice under all circumstances which incurs almost universal reprobation. 26,218, 26,948.

## Physical Effects of the habitual Use of Opium.

32. A large body of evidence of a conflicting character was given on this subject. Many medical and other witnesses stated that the habitual use of opium in any form for other than medical purposes is decidedly deleterious. NOTE Q.

Other witnesses, including a majority of the official doctors, deny that there are any evil consequences from opium-eating in moderation, some maintaining that it produces no evil effects and others alleging that it is actually beneficial.

Allusion has already been made (paragraph 25) to the controversy as to the value of opium as a prophylactic against malarial fever. Copious references to important medical evidence will be found in the Notes, showing that this prophylactic theory is an entirely new one; not taught in the medical schools; never heard of by many practitioners; that opium is not used or recommended by many of those who have heard of the theory; that many practitioners who profess to believe in it prefer other remedies; that other practitioners, both pro-opiumists and anti-opiumists, deny altogether that opium does possess any such prophylactic properties; and that vast numbers of the people have no knowledge of or belief in opium as a preventive of fever. NOTE Y.

It is incredible that if the highest medical and other authorities in India seriously believed in this prophylactic use of opium that they should have allowed so many members of the medical service to remain in ignorance of it. The opinion of the Government of Madras was indicated when a complaint was made that they were teaching the people of certain tracts to rely on opium as a febrifuge, for they replied that so far from that "we are doing "all we can to gradually wean them from their hereditary habit of using it "on all occasions." "Consumption of Opium in India," C.—6562, 1892, p. 52.

It is admitted on both sides that habitual consumers, who are unable to get the usual dose at the usual hour (*), besides suffering pain and inconvenience, are for a time, incapacitated wholly or partly for the discharge of their ordinary duties. (*) 2173-6, 12,902, 20,331, 23,606, 27,916, and many others.

## Moral Effects of the habitual Use of Opium.

33. As to the moral effects there is the same diversity in the evidence, for while a large number of witnesses declare that the use of the drug is detrimental morally, leading to idleness, inactivity, weakening of control over the will, and bad habits generally, other witnesses maintain that in their experience these results have not been observable. NOTE R.

It is obvious that the positive testimony of those who have witnessed the evil of which they speak is not displaced by the evidence of any number of witnesses who have not observed the injurious effects of the drug on other people. It is admitted on all hands that the opium habit obtains an imperious sway over those who become subject to it. It is surely playing with words to contend that a mastery so powerful is not lowering to the moral nature of man.

## Social Effects.

NOTE S.

34. Violent crimes are not attributed to opium, but there was a good deal of evidence that there is, in the case of the habitual consumer, an imperious craving for the periodical dose which constantly leads him, when he is poor, to resort to petty thefts in order to obtain money for the purpose of getting opium.

This allegation again was denied by certain Government witnesses, but we had no evidence that it is the practice to inquire into the original cause of petty theft; indeed one witness distinctly stated that it was not.

8770.

## Other Considerations.

10,868, 4200, 4235, 12,391–2, 26,770, 19,331, 27,102, 23,511, 25,954, 27,569, 28,114.

35. It is universally admitted, even by pro-opium witnesses, that the injurious effects of opium appear much sooner and more markedly in the case of the poor than of the rich, because the latter are able to provide themselves with abundance of good and rich food, which appears to counteract the action of the opium.

NOTE T.

Nor is it denied by pro-opium witnesses that excessive use produces evil results both physical and moral. It is clear from the evidence that the excessive use is largely a matter of time, because as soon as a moderate dose fails in its effect, as it usually does sooner or later, the quantity must be increased.

5832, 8805, 15,145, 17,177, 19,032, 25,522, 2151, 25,960, 26,613, and many others.

The fact of this tendency to increase the dose was attested by the evidence of a large number of witnesses on both sides. The anti-opium witnesses were practically unanimous on this point, and were supported by not a few of those who defended the practice of eating opium. But other pro-opium witnesses denied this tendency to increase beyond a given point. How this point is to be determined, except indeed by dangerous experiment, was not explained.

12,484, 15,912, 19,228.

The difficulty of discontinuance or even diminution of the habitual dose becomes greater in proportion to the length of the period of indulgence, until at last cessation becomes almost impossible.

NOTE U.

## Comparative Effects of Opium on Natives of Europe and of India.

36. The question has been raised as to whether the consumption of opium is a matter of race, whether there is any reason why opium is consumed more in the East than in the West, and whether there is any difference in the tolerance (to use the medical term) of the inhabitants of Europe and of India.

NOTE V.

The evidence presented to us shows that if there be any difference, Europeans possess greater tolerance.

## Indian Missionary Opinion.

2302–4. 23,329.

37. In some Christian denominations in India there is actual prohibition, and in others a general understanding against the admission into church membership of converts who indulge in opium. This fact is strong proof of the sincerity of the opinions of the missionaries of those denominations, for it is obviously not to their interest to unduly restrict the number of their converts, and it is clear that they would not do it but for substantial reasons.

Several memorials were forwarded to the Commission from missionaries and others interested in mission work. Some of them [a] expressed strong views against the use of opium and the present opium system, these views being supported by some of the signatories appearing personally as witnesses. Other memorials [b] took a less unfavourable view, and it is important to observe that none of those who signed these latter memorials offered themselves as witnesses, and consequently were not subjected to any examination of their views and means of knowledge.

(a) Vol. II., p. 314. Vol. II., p. 460. Vol. V., p 137.

(b) Vol. II., p. 438. Vol. V., p. 138.

Of the 45 missionaries and others closely associated with them who appeared before us as witnesses, and submitted to the test of cross-examination, 41 [c] condemned the use of opium, two [d] may be said to have occupied neutral or indefinite positions, and two others, [e] one of whom declared himself an "abolitionist on purely moral grounds," to some extent defended or at least extenuated the use of opium.

(c) 2238, 2589, 2756, 6921, 11,015, 13,988, 21,382, 21,463, 23,308, 23,332, 23,456, 25,521, 26,434, 26,539, 27,822, 4278, 7739, 10,611, 19,894, 21,297, and 21 others.

(d) 8652, 17,246.

(e) 5457, 16,902.

*See* also Vol. I. Q. 26.

## Recommendation as to the Prohibition or Restriction of the General Use of Opium.

38. The balance of evidence shows that the non-medical use of opium is usually injurious to the consumer, and I am of opinion that much may be done to discourage the common use of the drug.

The Minutes of Evidence contain a large body of testimony showing that prohibition or restriction would be approved by the mass of the people in many parts of India. More than a hundred witnesses (three-fourths of whom were natives of India) were in favour of prohibition, in addition to a number of others who desired some form of restriction, short of prohibition. NOTE V. V.

The difficulties in the way of any further restriction propounded by some of the witnesses appear to me greatly exaggerated.

It is contended that, were further restriction attempted, it would be impossible, except in the large towns, to find persons to whom the sale for medicinal purposes could be entrusted. But the present regulations authorise the issue of druggist's and doctor's licenses, and these are granted to hakims and vaids practising eastern systems of medicine. In Bengal alone, 1,264 of these licenses were issued in 1892-3. Vol. II., pp. 427 and 467. Vol. II., p. 429.

As the people of India are in the main abstainers from the drug, and its consumption is not general, except in certain districts, some form of local veto on the common sale, ought, I think, to be adopted. It might also with great advantage and with popular approval be made applicable to alcohol.

I would further recommend a change of system by which the present opium contractors or vendors, who profit directly in proportion to the amount of opium they sell, should be replaced by official vendors, with fixed salaries.

So far from having any inducement to push the sale of the drug they should be directed, as far as possible, to discourage the non-medicinal use, and regulations should be laid down authorising them to refuse to supply persons whose relatives or friends complain that it is improperly used. All opium sold should be labelled "Poison," as in England, and should be accompanied by a caution, printed in the vernacular and in English, against its use for non-medical purposes. These official vendors would usually be natives of India, on moderate salaries. They should be located in places suitable for supplying the legitimate medicinal requirements of the people and be vigilantly supervised.

The alterations suggested, if properly carried out, would undoubtedly be an important step towards the reduction of the consumption.

## Recommendation as to Prohibition of Opium Smoking.

39. Although very diverse views were laid before the Commission as to the habitual use of opium by eating and drinking, there was a striking consensus of disapproval of smoking as an injurious and degrading practice. Not only did the anti-opium witnesses attribute the worst effects of opium to the habit of smoking, but practically the whole of the witnesses who justified or palliated the practice of habitually eating moderate quantities emphatically condemned smoking in all its forms, as being unquestionably injurious and pernicious, and constituting a low and vicious habit. 2761, 3510, 4921, 5001, 5913, 3843, 6341, 10,840, 14,228, 15,723, 19,594, 19,757, 20,047, 25,288, 28,025, 4448, 21,590, 21,812, 21,655, 26,271, 14,416, 16,009, 16,688, 17,422-3, 18,536-8, 22,033, 26,057, 21,870.

Most of these pro-opium witnesses were in favour of further reduction of the facilities for smoking, and some of them approved of its total prohibition.

Surgeon Lieut.-Colonel Crombie said:— 3529.

"I think there is a consensus of opinion among all, including opium-smokers themselves, that "the chandu and madak manufactures should be abolished."

The Hon. A. Cadell, member of the Revenue Board, North-West Provinces and Oudh, while approving of opium eating, said:— 19,097.

"Opium smokers are, if belonging to the upper classes, debauchees, and if belonging to the 19,098.
"lower classes, disreputable persons, with a tendency to crime, caused not by any tendency of "opium in that direction, but by the irresistible character of the vice and by the necessity felt to "gratify a vice which is an expensive one. . . . . There is also a general feeling "among the more respectable classes against opium smoking."

*See* Note W. NOTE W.

40. Regarding the evidence on this particular subject as remarkably distinctive in its unanimity and conclusiveness, I consider that nothing short of absolute prohibition will satisfy the requirements of the case. The only proper action of the Government in accordance with public opinion should clearly be—

I. To discontinue all licenses in respect to preparations of opium for smoking

II. To make unlawful—

(*a*) the manufacture, sale, purchase, or possession of chandu, madak, and other preparations of opium for smoking purposes;

(*b*) the manufacture, sale, purchase, or possession of materials, utensils, or apparatus for making or smoking such preparations of opium;

(*c*) the association of two or more persons at any place for the purpose of smoking opium or any such preparations.

The administration and enforcement of such a law prescribing proper penalties for breaches thereof ought to be easy and effectual, for the evidence of any actual offence must be readily obtainable.

The fear has been expressed that a prohibitory measure of this character would open the way to inquisitorial and domiciliary visits by the police, and their possible bribery by the more influential and wealthy opium smokers. But the existing law is similarly open to be used in an objectionable way, and absolute prohibition, is not liable to any greater objections than those which apply to more partial and inadequate measures of repression.

## Burma.

41. The case of Burma is exceptional and must be referred to separately.

6658, 6691, 6777–8, 7585, 8341–2.

Most of the British officials in Burma have frankly recognised the evil effects of the consumption of opium in that country, as well as the practically unanimous opinion of the Burmese people against its public sale, and notwithstanding serious revenue considerations, have strongly advised restriction or prohibition. The Government of India has yielded slowly and apparently with reluctance to the advice given by its own officers in Burma, and to representations made from Great Britain. New regulations came into force on the 1st January 1894. As a general rule the possession of opium, except for medical purposes, is now forbidden to Burmans. This rule is absolute in Upper Burma. In Lower Burma natives were allowed some months during which they might register themselves as consumers, and thus become entitled to purchase opium. The desire of the authorities in Burma that registration should be made compulsory for foreigners as well as for Burmans ought, in my opinion, to be acceded to. In some districts the sale of the drug to foreigners and registered Burmans is still in the hands of farmers. In other districts a system of retail sale by official vendors is being tried. This will, I think, be found to be a distinct improvement upon the old system of licensed shops. In every other practical way the consumption of opium should be restricted to the legitimate medical requirements of the people.

I., p. 354, pp. 463–79.

6659, 8021.
Vol. II., p. 537, par. 5.
Vol. II., p. 545, par. 26.
Vol. II., p. 635, Rules 23, 24.

Sir David Barbour, in speaking of the special measures which had been taken to check the consumption of opium in provinces where its use was believed to be excessive (including Burma), said, "I am not at all sure now "that those measures have not been carried too far, but they have been "adopted to a great extent in deference to English public opinion."

2108.

The whole history of the sale of the drug in Burma under British rule; of the protests of the people of that country against it; and of the reluctance of the Indian Government to listen to their entreaties, furnishes, in my opinion, most powerful testimony to the need and to the value of the expression of English public opinion in these matters.

Vol. II., p. 650, par. 7.

The Burmans are clearly entitled to demand that their wishes should be respected, and their right to the protection they have so long asked for should be fully recognised.

## Malwa Opium.

42. The term Malwa Opium is employed to describe the opium produced in the Native States in the west of India, either for consumption in India or export from the port of Bombay.

A great part of this opium is produced in the ill-defined tract of land known as Malwa, comprising several Native States, the soil and climate of which are said to be specially favourable to the growth of poppy.

The extension of British territory in India has been so managed as to cut off the poppy-growing States from communication with the sea; and the transit of opium through British territory has been prohibited, except under an elaborate arrangement of passes, granted by British officers on payment of a heavy duty, and by certain duly authorised routes. This pass duty is not the subject of any agreements or treaty stipulations, but is imposed at the will and pleasure of the paramount power. It was fixed on the 1st October 1862 at Rs. 600; was raised on the 16th July 1877 to Rs. 650; on the 15th September 1879 to Rs. 700; on the 28th June 1882 it was reduced to Rs. 650; on the 5th July 1890 further reduced to Rs. 600; and on the 1894 was raised to Rs. 650. The amounts realised from this source, together with the quantity of opium, are as follows:— Vol. II., p. 347.

| Average of 3 Years. | Rx. | Chests. | Duty per Chest. Rs. |
|---|---|---|---|
| 1883–84 to 1885–86 - - | 2,498,455 | 41,008 | 650 |
| 1890–91 to 1892–93 - - | 1,753,110 | 32,510 | 600 |

Vol. II., pp. 342 and 347.

These figures are in part taken from a table which will be found in Vol. II., p. 347, which shows that while the quantity of opium exported from Bombay has been considerably declining, that which is diverted for local consumption has been somewhat increasing.

## The Native States.

43. No good purpose would be served by a detailed statement of the treaties and agreements made in regard to opium with the numerous Native States. They are described in App. X., Vol. II. By pressure, which they were not in a position to resist, most of these States have been induced to consent to arrangements the aim of which has been to safeguard and increase the revenue which the East India Company and the Indian Government have obtained from opium. In many cases it has been arranged that the rulers of Native States shall prohibit the cultivation of the poppy, and so regulate the traffic in opium as to increase the revenue of the State at the expense of their subjects. There is no evidence that in any of these States compensation has ever been given to cultivators or traders whose interests have been interfered with.

44. As to the power to stop the transit of opium through British territory, Sir Lepel Griffin said, "Of course you can prohibit the export." Sir D. M. Barbour said, "I think the export to China could practically be stopped," but he was confident smuggling into British territory could not. The Hon. W. Lee Warner, in his memorandum, lays down that "interference with the "internal affairs of Native States has been justified in the past, either "(*a.*) when adopted in the interests of the states, or (*b.*) when adopted in "the interests of the British Government." He marshals instances "under class (*a.*)" into six recognised grounds, including "(vi.) to check offences "against natural law or public morality." The suppression of seizing people for sorcery, and abolition of suttee, are given as instances.* Mr. Warner holds that opium does not come under any of these heads. Colonel Trevor, agent to the Governor-General, Rajputana, was asked, "would not it be an 1543. 2082. Vol. IV., p. 495. 20,794, 20,839.

* In India, as elsewhere, officials are too much disposed to dread reforms and innovations. The case of suttee affords an illustration. Hunter, in his Indian Empire, page 475, says: "In spite of "strenuous opposition, both from *Europeans and natives*, Lord W. Bentinck carried a Regulation "in Council on the 4th of December 1829, by which all who abetted suttee were declared guilty "of culpable homicide." Hunter also refers to other reforms which "were distasteful to the "covenanted service, and to the officers of the Army," and adds that Lord Bentinck "was "supported by the Court of Directors, and by the Whig Government at home."

" injustice not to allow " the produce of the States to be transmitted through British territory, and replied, " I do not quite see that. If you think a thing " is bad, you are not bound to give a passage through your territory."

22,301. Vol. IV., p. 117. 22,935. 45. Certain Native States, including such important ones as Indore, Baroda, and Bhopal, consider that interference or prohibition in regard to opium would be outside, or contrary to, treaty engagements. Some of the Sikh States, on the contrary, took a different position. General Sardar 16,365. Ratan Singh, of the Jind State, said, " if the Government prohibits the " use of opium in British territory, similar orders could be issued in the 16,271. " Jind State." He was not sure whether such a thing would be viewed as interference. Lala Dewa Singh, of the Nabha State, was asked what com- 16,289. pensation, if any, His Highness' State would be fairly entitled to in the event of prohibition, and replied " As the prohibition is entirely beneficial to the " people, this State does not wish for any compensation for the loss of revenue 16,372. " resulting from such prohibition." Pandit Sarup Narian, of the Faridkot State, gave a similar answer.

46. The fact that in the face of a greater falling off in the supplies of Malwa opium than of Bengal opium the Indian Government has, since the visit of the Commission, materially increased the payment to the Bengal cultivator and put an additional burden of duty on the Malwa produce, shows more clearly than any official evidence that the right of dealing at will with the export trade, Native as well as British, is quietly claimed and exercised by the paramount government.

47. It is not possible to treat the suggested claims for compensation placed before the Commission seriously. Though compiled at the instance of the Indian Government and revised by its political officers, they neither deserve respect nor criticism. A few illustrations must suffice. The Tonk State in claiming Rs. 132,900 for loss of land revenue, Rs. 59,919 for Customs revenue, and Rs. 94,600 for traders' profits, claims Rs. 104,030 for compensation for Vol. IV., p. 394. money lenders ! One item in Colonel Abbott's summary is, " extra expense of " living on account of great rise in price of opium " Rs. 489,873.

In the State of Bundi, the average out-turn for the 12 years ending 1892–3 20,922. is given at 1,007 maunds ; for the last half of that period at 371 maunds. (In the last year it was only 93 maunds.) Yet compensation is claimed 20,945. for an annual trade of 2,000 maunds, and Colonel Abbott reports that Vol. IV., p. 395. the " Political officer, Lieut.-Colonel Thornton . . . considers the " Durbar's estimate of the losses, direct and indirect, both to itself and its " subjects, as accurate as it is possible to make them under existing " circumstances."

In the Central Provinces, Sailana claimed Rs. 160,475 for land revenue. Vol. IV., p. 407. Lieut.-Colonel Robertson estimates it at Rs. 60,000. The State claims Rs. 128,380 for cultivators. He reduces this to Rs. 40,000. Of Multhan the Vol. IV., p. 407. same officer writes, " Losses to cultivators and traders were not given by the " State, they were assumed by me."

It is clear that the evidence thus brought before us can be of no assistance if claims in equity should be seriously advanced by these States.

## Conclusions.

48. The form of the questions submitted to the Commission makes it difficult to give categorical answers, but in reference to the paragraphs thereon I reply :—

I.—(*a.*) That the growth of the poppy and manufacture and sale of opium in British India should be prohibited, except for medical purposes.

(*b.*) Such prohibition should not be forcibly imposed on the Native States, but the example of the British Government should be supported by such influence as may legitimately be employed.

II. The existing arrangements with the Native States in respect to the transit of opium through British territory depend absolutely on the will of the paramount power, and appear to have been dominated throughout by the financial policy of British India. When the Chinese trade from British India has been brought to an end, as I

hold it certainly should be, and when licenses to cultivate are no longer granted, licenses for the transit of opium through British territory may justly be withheld.* There is no legal claim for compensation. Any equitable claims must be tested by further inquiry and reliable evidence.

III.—(*a.*) There is no precedent for compensation to landlords or cultivators on the termination of opium cultivation, and there would be no claim for compensation for withholding further licenses.

(*b.*) Adequate information was not placed before us as to the cost of additional preventive measures, but the general statements that were made appear greatly exaggerated.

(*c.*) The revenue derivable from opium has been for some years declining, and can no longer be safely relied upon. (*See* Note X.) NOTE X.

IV. It is desirable to replace the present opium contractors and vendors by official vendors, with instructions and discretion to restrict the sale. I recommend the entire prohibition of smoking.

V. The consumption of opium obtains more or less extensively amongst the races and in the localities most fully represented before the Commission. Little or no evidence was tendered from large districts where its non-medical use is little known. It is clear that the opium habit so far from being common amongst the people generally is relatively exceptional in British India. It is a vice in Calcutta and the large towns, but certainly not of the majority of the populations. It is common amongst the Rajputs and to a less extent the Sikhs, but the sweeping statements made as to its universal use by them are quite untenable. Women are seldom addicted to the habit. The moral effect is hurtful in tarnishing and weakening the will power of the user: the physical effect is generally injurious in proportion to the amount taken and to the inability of the consumer to protect himself against it by plenty of good food.

VI.—(*a.*) The people of India do not, so far as regards the greater part of that country, regard the use of opium for non-medical purposes favourably.

(*b.*) The people of India maintain that they are already taxed to the very limit of their ability, and that they are unable and unwilling to submit to any additional burdens.

Serious consideration should promptly be given to the question of reducing the expenditure now borne by the people of India.

49. In these pages I have given my conclusions on the evidence presented to the Commission. As stated in a Memorandum accompanying this Dissent, I do not think that the whole of the facts were presented to us with the impartiality and completeness due to such an inquiry. The Report adopted by my colleagues appears to me to partake more of the character of an elaborate defence of the opium trade of the East India Company, and of the present Government of India, than of a judicial pronouncement on the immediate questions submitted to us. On this ground also, as well as for the reasons already given, I am unable to join in it.

50. One of the last paragraphs in the Report (No. 274) refers to me, and includes the following sentence:—"We regret that in the discussions which "took place during the preparation of our Report we were not placed in "possession of the views of our colleague."

It will be seen by a letter to the Chairman from myself, a copy of which is appended, that I was distinctly precluded by him from taking part in the discussions referred to. At the first subsequent meeting of the Commission, I referred to my letter, and to Lord Brassey's desire that I should refrain from discussion. Lord Brassey intimated that I had correctly stated his wishes. I do not therefore understand the propriety of this reflection, by the majority, on the course which I took at the Chairman's direct instance and request, with the concurrence of four other colleagues. NOTE Z.

18th March 1895. HENRY J. WILSON.

* Legitimate medical requirements are not here alluded to.

# B.—NOTES TO MR. WILSON'S DISSENT.

NOTE A. to par. 2.—RESOLUTION OF THE HOUSE OF COMMONS (30TH JUNE 1893) WHICH LED TO THE APPOINTMENT OF THE COMMISSION.

"That having regard to the strong objections urged "on moral grounds to the system by which the Indian "Opium Revenue is raised, this House presses on "the Government of India to continue their policy of "greatly diminishing the cultivation of the poppy "and the production and sale of opium, and desires "that an humble address may be presented to Her "Majesty, praying Her Majesty to appoint a Royal "Commission to report as to :—

"1. Whether the growth of the poppy and manufac- "ture and sale of opium in British India "should be prohibited except for medical pur- "poses, and whether such prohibition could "be extended to the Native States.

"2. The nature of the existing arrangements with "the Native States in respect of the transit of "opium through British territory, and on "what terms, if any, these arrangements "could be with justice terminated.

"3. The effect on the finances of India of the pro- "hibition of the sale and export of opium "taking into consideration (*a*) the amount of "compensation payable ; (*b*) the cost of the "necessary preventive measures ; (*c*) the loss "of revenue.

"4. Whether any change short of total prohibition "should be made in the system at present "followed for regulating and restricting the "opium traffic and for raising a revenue "therefrom.

"5. The consumption of opium by the different races "and in the different districts of India, and "the effect of such consumption on the moral "and physical condition of the people.

"6. The disposition of the people of India in regard "to (*a*) the use of opium for non-medical pur- "poses ; (*b*) their willingness to bear in whole "or in part the cost of prohibitive measures."

NOTE B. to par. 5.—OFFICIAL OPINION OF OPIUM.

Lieut.-Colonel James Tod, political agent to the Western Rajput States, in his work on the "Annals "and Antiquities of Rajasthan," written in 1820, published in 1832, writes :—

"This pernicious plant has robbed the Rajput of half "his virtues. (Vol. I., p. 644.) . . .

"This drug, which has tended more to the physical "and moral degradation of the inhabitants than the "combined influences of pestilence and war." (Vol. II., p. 630.)

"Execrable and demoralising plant" (poppy). (Vol. II., p. 634)

Mr. C. A. Bruce, superintendent of the tea plantations in Assam (prior to 1840), refers to opium as the—

Hansard, vol. 68, p. 380.

"Dreadful plague which has depopulated this beauti- "ful country . . .

"This vile drug has kept and does now keep down "the population . . .

"Few but those who have resided long in this un- "happy country know the dreadful and immoral "effects which the use of opium produces on the "native."

Mr. A. Sym, 11 years in the opium district of Gorakhpur, and for a time in charge of the opium agency there, wrote in 1840 :—

Hansard, vol. 68, p. 382.

"The health and morals of the people suffer from the "production of opium. Wherever opium is grown it is "eaten, and the more it is grown the more it is eaten, ". . . its pernicious effects are visible on the popula- "tion of the opium districts, particularly in the neigh- "bourhood of the depôts . . . One opium cultivator "demoralises a whole village."

A resolution by the Government of Bombay in 1881—

"Ordered that the following letter be addressed to "the Government of India :—

". . . on the question of the expediency of per- "mitting the cultivation of the poppy in Sind. . . .

"III. I am at the same time to state that this "Government consider there are very strong objections "to the introduction of an industry so demoralising in "its tendency as opium cultivation and manufacture "into a province where it is at present unknown. . . . "It has already been tried in Gujarat, and the result "was widespread corruption and demoralisation.

"At present the consumption of opium in this "Presidency is very limited, but if the cultivation of "opium and manufacture of opium were permitted, "every village might have its opium shop, and every "cultivator might contract the habit of eating a drug "which is said to degrade and demoralise those who "become addicted to it. On the ground of public "morality, therefore, his Excellency the Governor in "Council would strongly deprecate the grant of "permission to cultivate the poppy in Sind, or in any "other part of this Presidency."

NOTE C. to par. 6.—SHORT DESCRIPTION OF THE GROWTH OF POPPY AS IT AFFECTS THE INDIVIDUAL RYOT.

[The figures are not the same as in par. 6, because there the agencies are dealt with together, and here separately.]

*In the Benares Agency.*

In the month of September he proceeds to the head-quarters or weighment place of the district in which he lives, a distance, on the average, of about 20 miles, to receive license to cultivate a specified plot for the growth of the poppy, the plot being usually only a small portion of his farm or holding, averaging ·61 of a bigah, equal to ·38 of an acre, or 1,839 square yards. He receives at the same time the first advance of Rs. 3·66 (or, taking the rupee at 13*d.*, 3*s.* 11½*d.*), being at the rate of Rs. 6 per bigha. Returning home, he prepares his ground and sows the poppy seed. Q. 2955. II., p. 320.

When the crop is a few inches above the ground he sometimes, not always, gets a further advance, not exceeding Rs. 1·22, or 1*s.* 3¾*d.*, being at the rate of Rs. 2 per bigha. In February or March when the seed capsules or heads are formed, he lances or slits them, and carefully scrapes off the exuding juice or opium, which is preserved in earthen pots until April, when he again travels with it to the weighment place, where he delivers it to the officials of the Opium Department. II., 320.

The average weight received from each cultivator is 2·77 seers, or 5 lbs. 11·17 ozs., and the payment on account which he then receives averages, say, Rs. 7·93, or 8*s.* 7*d.*

The opium is then forwarded to to the factory at Patna, in the case of the Behar Agency, or to Ghazipur in the case of the Benares Agency. The "consistence" or proportion of moisture in the opium is there ascertained. An account is made out, and in July or August the cultivator, travelling again as it appears to the weighment place, receives the balance due to him, averaging, say, Rs. 1·06, or 1*s.* 1¾*d.*, the price being calculated at the rate of 5 Rs. per seer, equal to 2*s.* 4¾*d.* per lb. av. for opium of 70 degrees of "consistence." A somewhat higher or lower price will be paid in case it contains more or less than 30 per cent. of water. The total average amount paid to each ryot for opium is 15*s.*

*In the Patna Agency.*

In the Bihar or Patna Agency the ryot is in a worse position. He has to deliver his opium with 5 per cent. less moisture. Other arrangements of the Agency are less favourable to him. The land is less productive. The total amount of opium he weighs in is only 4 lbs. 11·70 ozs., for which he receives only 12*s.* 5½*d.*

V., p. 5. NOTE D. to par. 7. — EXTRACT FROM CORRESPONDENCE ON THE ADMINISTRATION OF THE OPIUM DEPARTMENT.

10. "The railways and other means of communication "which have been opened out, and the ever growing "demands of the commerce of the country, have com- "pletely changed the state of affairs. Opium has lost "its place as the most lucrative crop a cultivator can 14. "grow. . . . . The Board are of opinion that much "may be done to improve the popularity of the opium 15. "cultivation. . . . . In conclusion I am to state "that the policy the Board would recommend may "briefly be summarised as follow:—I. An adequate "price to be paid for crude opium, to be settled from "time to time with reference to the competition of "other crops. . . . . IV. Adequate salaries to be "paid to the native establishment and the abolition of "all illegal gratification strictly enforced."

(Letter from Officiating Secretary to the Board of Revenue, Lower Provinces, to the Secretary to the Government of Bengal, 19th January 1884.)

NOTE E. to par. 7.—ON DIFFICULTY OF MAINTAINING POPPY CULTIVATION.

Mr. Kemble, opium agent, of Bihar, in his Annual Report of the Agency for the year 1890–91, says :—

"There can be no doubt that since the opening of the "Bengal and North-Western Railway the difficulty of "maintaining the cultivation of such a delicate crop "as poppy has largely increased." (Par. 7.)

He adds that competition of other crops

"is becoming so keen that our department now have "difficulty in maintaining their position." (Par. 8.)

Mr. Rivett-Carnac, opium agent, Benares, in his Annual Report for 1890–91, speaks of certain districts where the cultivation of the poppy is popular, but of others where the cultivators have "for the present "lost heart," and of other cultivators as "gradually "withdrawing from the industry." (Par. 6.)

Similarly in his Report for the year 1891–92, Mr. Kemble (Bihar) says :—

"We cannot be surprised at the disinclination gener- "ally of the cultivators to take advances. . . . . "The other main cause which tended to reduce the "settlements was the difficulty in obtaining good lands "for our cultivation, owing to the competition of "other crops." (Par. 8.)

He quotes Mr. Christian, an officer of long experience, as saying :—

"The good lands are no longer under the poppy "cultivation, but have either gone to indigo or other "better paying crops. The crops that are competing "with poppy, in fact, I ought to say, that have "swamped and overcome it, are tobacco, potato, haldi, "chillies, and other garden produce." (Par. 9.)

In his Report for 1891–92 Mr. Rivett-Carnac again discusses the competition of other crops, but takes a less gloomy view of the prospects of the opium department, than his colleague, Mr. Kemble.

NOTE F. to par. 8.—OFFICIAL INQUIRIES ON COMPLAINTS OF COMPULSION (OR PERSUASION) IN REGARD TO THE CULTIVATION OF POPPY.

In the first case referred to by Mr. Forbes, Mr. Lyon, settlement officer, had reported that certain officers had been bringing pressure to bear.

A deputy magistrate, Maulvi Syed Ali Hosain, who was directed to make an inquiry on the subject, gives the statements of a number of ryots. Vol. V., p. 357.

"Bansi Mahton states: My brother is khattahdar of "this village. His name is Tulsi . . . . the "former zilladar (since transferred) induced us to "cultivate poppy, and told us to try for this year. The "land is not capable of producing opium . . . . he "(the zilladar) took my brother to Hajipur; my "brother was unwilling to go, and he said that we "would not grow opium . . . . He (the zilladar) "did not threaten us with punishment if we did not "grow, but he pressed us to do so by taking my "brother to Hajipur for receiving dadni (advance)."

Shaik Hidayat Ali, says that the Zilladar Rheda Bux—

"Insisted Tulsi to receive dadni (advance for poppy) ". . . . he stayed three or four days to persuade "us to grow opium . . . . he did not beat any of "us . . . . his fault was to compel khattahdar "to receive advances, we had since fear that if we did "not cultivate we would be falsely proceeded against "by zilladar."

Gudri Mahton, referring to the zilladar, says :—

"I cannot say that he told each and every villager "to grow opium, but he did me."

Tulsi Mahton says :— Vol. V., p. 358.

"He (the zilladar) told me that we must grow opium. "He advised us to cultivate poppy, as we had no mind "to grow this year. He said that I must go to receive "advances."

Other ryots made no complaints. Some said they cultivated willingly. It was suggested by them, or to them, that the zilladar stayed so long in the village because it was raining.

The Deputy Magistrate, reporting on the case, says :—

"What the zilladar, seems to have done was that he "insisted a little too much upon the khattahdar to "receive dadni (advances), and holding out good hopes "for the poppy growth owing to rains," and he points out "that there was no kind of violence used by him in "compelling them to grow opium."

It is instructive in the face of these statements that Mr. Hare in enclosing the report and depositions says :—

"No touch or trace of any attempt at compulsion Vol. V., p. 356. "appears."

Mr. Forbes in his letter says that—

"Market garden produce has admittedly of late Vol. V., p. 355. "years begun to compete successfully with opium. "Cases of this kind must therefore be expected to "occur."

This seems to show that compulsion, which is called in India "persuasion," is expected as a matter of course.

THE SECOND CASE REFERRED TO BY MR. FORBES.

Rai Jai Prakash Lal Bahadur, C.I.E., dewan (chief officer) of the Dumraon Raj, was interviewed on the 28th and 29th of August 1893, by Mr. Christian, sub-deputy opium agent of Shahabad, and Mr. Sen, assistant sub-deputy agent, in reference to the "reluctance of the cultivators to engage the full area" desired or required by the Opium Department. It was arranged that the dewan was— Vol. V., p. 359.

"To use his influence with some of the ryots of the Vol. V., p. 359. "Raj to induce them to continue the cultivation ". . . by using influence he only meant persua- "sion; that he had merely asked the ryots of certain "villages for his sake to try cultivation for one year "(this year) longer, and that they had consented to do "so."

It is further explained that this influence or persuasion was exercised by a circular letter issued to the

tahsildars of the Raj, directing them to use their endeavours to help poppy cultivation.

A copy of this circular has been asked for, but has not yet been produced.

Vol. V., p. 359. It appears further that Mr. Christian had a conversation himself with one of these tahsildars, who explained "the kind of help given by the Raj." So far as I understand, it amounts to this: that land was to be taken from one man and given to another for opium, if he would grow poppy; that if one man possessed a well another was to be allowed to take water from it to grow poppy, and that rent was to be reduced by the middleman to a ryot who would grow poppy.

Under these circumstances it is not surprising that the dewan was, as Mr. Forbes states, unwilling to give evidence. His position was extremely embarrassing.

Vol. V., p. 355, par. 4.

Vol. V., p. 372. Mr. Dane says that the dewan "attended at "Bankipur on the first day that the Commission sat "there" (January 3rd). If this means that he was present at the sitting and was ready to be called it does not accord with Mr. Forbes' statement.

Vol. V., p. 355, par. 5. Mr. Dane and Mr. Forbes agree that this important witness was present on a later date (January 6th). On neither occasion was his presence known to the Commission generally. It was most important that he should be heard, and no explanation has been given as to why any member of the Commission was kept in ignorance of his presence.

### The Third Case referred to by Mr. Forbes.

Vol. V., p. 360. Mr. F. H. B. Skrine, collector of Shahabad, and subsequently of Bhagalpur, had an interview about the middle of August 1893 with Mr. Christian, sub-deputy opium agent, already referred to, who desired—

"My co-operation in restoring the area under poppy "to its normal. He told me that . . . the opium "agent of Behar, had instructed him to consult me on "the subject."

Mr. Skrine undertook to issue a circular, but delayed it for about a fortnight, when he was reminded of his promise by Mr. N. C. Sen, assistant sub-deputy agent. He says:—

Vol. V., P. 361. "Thereupon I addressed a circular . . . to the "sub-divisional officers of Bhabua, Buxar, and Sasaram, "and the manager of D. & D. Kumar's Ward Estate, "in which I informed them that it was the policy of "the Government to extend opium cultivation in wards "and Government estates. I asked them to give the "sub-deputy opium agent a list of villages in their "charge which contained land suitable for sowing "opium, and to instruct their tahsildars to use their "utmost efforts, in co-operation with the sub-deputy "opium agent, to induce our ryots to take opium "advances."

Vol. V., p. 361. Mr. Skrine, being called to account, makes various statements in palliation of his conduct, which he does not attempt to defend, and Mr. Commissioner Forbes admits that—

Vol. V., p. 356. "Things were pushed further than they ought to "have been." Mr. Skrine's orders being "such as I "should certainly not have approved had they come "to my notice; nor are they warranted, so far as I am "aware, by any instructions that have ever been issued "by Government or by the Board of Revenue."

### Note G. to par. 10.—Potatoes uprooted at Barni, near Patna.

On the 19th December 1893, Mr. Gennoe, assistant sub-deputy opium agent, destroyed a plot of potatoes at the village of Barni, near Bankipore, on the allegation of a zilladar that this was land on which the cultivator had engaged to grow opium. Evidence to this effect was given before us on the 6th January 1894 by my son and Mr. Gupta.

12,386 to 12,454.

On the same day we were informed by Mr. Tytler sub-deputy opium agent, in the presence of Mr. Forbes, the Commissioner of Patna, Mr. Rivett-Carnac, opium agent at Benares, and other officials, that it is not lawful under any circumstances to pull up the crops. 12,269.

At the request of the Commission a further inquiry was subsequently made, and the report of this inquiry has been forwarded to us since our return from India. The report shows that as a matter of fact the cultivator had committed no offence whatever. Mr. Wace says:— Vol. V., p. 140.

"I have very little doubt that he lost his potatoes "because he did not fee the zilladar."

The Assistant Sub-Deputy Agent attempted, in a letter sent by him to Mr. Wace, to justify his action by reference to a rule and a form in the Opium Manual. Mr. Wace points out that the rule does not cover this case, that the form is irrelevant, and that the official in question had not availed himself of an opportunity given him to produce witnesses on his own behalf. Vol. V., p. 142. Vol. V., p. 141. Vol. V., p. 142.

### Note H. to par. 15.—Condemnation of Opium by English Officials resident in China and Java.

Sir George Staunton, who was in China from 1792 to 1816, referred to opium as "an article of vicious luxury," and said:—

"The best lands of India might have been made to "produce that which was beneficial to man, instead of "being devoted to the cultivation of such a pernicious "article." Hansard, 1840, vol. p. 743.

Sir Stamford Raffles, who died in 1826, said:—

"The use of opium, it must be confessed and "lamented, has struck deep into the habits, and "extended its malignant influence to the morals of "the people, and is likely to perpetuate its power in "degrading their character and enervating their "energies, as long as the European Government, over-"looking every consideration of policy and humanity, "shall allow a paltry addition to their finances to "outweigh all regard to the ultimate happiness and "prosperity of the country."

Mr. Montgomery Martin, Colonial Treasurer at Hong Kong, refers to opium as—

"Desolating China, corrupting its Government, and "bringing the fabric of that extraordinary Empire to "a state of more rapid dissolution." Report H. C. on Chi Trade, 184

Sir Harry Parkes refers to opium as "a baneful article."—See his life by Stanley Lane Poole, Vol. I., p. 421.

Mr. L. E. Oxenham, late British Consul in China, says:—

"Do the Chinese, . . . desire the con-"tinuation of the trade now? Would the Chinese "Parliament vote for such a traffic? No one with "any knowledge of China would answer in the affirma-"tive. The opium is equally denounced by the "Government, by the Confucian literati, and by the "Buddhist and Taoist priesthood."—"Society of Arts Journal," April 1892, p. 485. Society of Arts Journal, 1892, p. 48

### Note J. to par. 15.—Chinese Official Condemnation of Opium.

Sir Robert Hart, G.C.M.G., who is in the service of the Chinese Government as Director of Customs, in the special report on opium issued in 1881, said:—

"Chinese who have studied the opium question "are opposed to a traffic which more or less harms "smokers. . . . They do not find in . . . the "revenue produced . . . any sufficient reason for "welcoming the growth of the trade, or for desisting "from the attempt to check the consumption of "opium."

The Chinese Foreign Office wrote to Sir Rutherford Alcock in July 1869 :—

"That opium is like a deadly poison, that it is most "injurious to mankind. . . . . The officials and "people of this Empire . . . all say that England "trades in opium because she desires to work China's "ruin, for (say they) if the friendly feelings of England "are genuine, since it is open to her to produce and "trade in everywhere else, would she still insist on "spreading the poison of this hurtful thing through "the Empire?"

Sir Rutherford Alcock, at that time Her Majesty's Minister at Pekin, said in reference to this :—

"He had no doubt that the abhorrence expressed by "the Government and people of China for opium was "genuine and deep-seated."

In a letter in the "Times" of July 29th, 1881, Li Hung Chang, then Grand Secretary and Viceroy of China, said :—

"I may assert here once for all that the single aim "of my Government in taxing opium, will be in the "future, as in the past, to repress the traffic . . . "never to desire to gain revenue from such a source."

Mr. Montgomery Martin, Colonial Treasurer of Hong Kong, states that the Emperor of China had remarked:—

"It is true I cannot prevent the introduction of the "flowing poison. Gain-seeking and corrupt men will "for profit and sensuality defeat my wishes, but "nothing will induce me to derive a revenue from the "vice and misery of my people."

NOTE K. to par. 15.—CONDEMNATION OF OPIUM BY MISSIONARIES IN CHINA.

The Rev. Dr. Medhurst, one of the earliest missionaries of the London Missionary Society, which was the first Protestant Society to enter China, in his "China" (London, 1838), says :—

"Those who have not seen the effects of opium-"smoking in the eastern world, can hardly form any "conception of its injurious results on the health, "energies, and lives of those who indulge in it. . . . "In proportion as the wretched victim comes under the "power of the infatuating drug, so is his ability to "resist temptation less strong, and debilitated in body as "well as mind he is unable to earn his usual pittance, "and not infrequently sinks under the craving of an "appetite which he is unable to gratify. . . . Those "who grow and sell the drug while they profit by the "speculation would do well to follow the consumer "into the haunts of vice, and mark the wretchedness, "poverty, disease, and death which follow the in-"dulgence, for if they did but know the thousandth "part of the evils resulting from it they would "not, they could not, continue to engage in the "transaction"

Numerous testimonies were communicated to the Commission by the Secretary of the Church Missionary Society, and by the Secretary of the China Inland Mission, all testifying to the evil effects of opium.

See also an important memorial signed by 17 Chinese Missionaries of all denominations (including two Bishops), and all of more than 25 years standing in China.

NOTE L. to par. 20.—QUOTATIONS AND REFERENCES AS TO ALLEGED EXTENSIVE USE OF OPIUM AND POLITICAL DANGER FROM INTERFERENCE.

Sir Joseph Fayrer, K.C.S.I., M.D., says :—

"It is well known that over large areas of country in 1637.
"India, by tens of thousands of people, opium in
"moderation is habitually used by the natives."

Dr. K. C. Bose, President of the Calcutta Medical Society, says :—

"Amongst the permanent residents of Calcutta only 3774.
"10 per cent. of the people actually take opium,
"whilst amongst those who come from other portions
"of the country nearly 20 per cent. use opium in some
"shape or other."

Rai Sheo Bux Bogla Bahadur, merchant and banker, representing the National Chamber of Commerce, says :—

"About 70 or 80 per cent. of both Rajputs and Sikhs" 6047.
take opium as a daily ration.

Surgeon-Colonel Cleghorn, M.D., Inspector-General of Civil Hospitals in the Punjab, says :—

"I fancy that about 50 or 75 per cent. of the inhabi- 16,849.
"tants of Lucknow take opium."

Mr. J. J. S. Driberg, Excise Commissioner of Assam, says :—

"Bearing in mind the conditions of the climate, and 9019.
"the fact that opium has been consumed in the
"Province from time immemorial, so that it has now
"become a necessity of life, it is certain that any
"attempt to stop consumption or even to limit or
"reduce it more than has been done in the past 10
"years would have a disastrous effect on the physical
"condition of the people."
"Then you say that stopping it would depopulate 9583.
"whole tracts?—Yes."

Sir Charles Crosthwaite, K.C.I.E., Lieut.-Governor of the North-West Provinces and Oudh, says :—

"There is no doubt that the people use opium very 14,813.
"largely, not in great quantities, but very widely. I
"think nearly all of them give it to their children, and
"believe that it is necessary. . .
"My opinion is that we could not actually prohibit 14,798.
"the use of opium except for medical purposes without
"a very large and oppressive force, and without an
"inquisition into the habits of the people which would
"be very unpleasant to them, and would make the
"Government, I think, exceedingly unpopular."

The Hon. D. R. Lyall, C.S.I., Member of the Board of Revenue, Lower Provinces, says :—

"I hold that, in a political point of view, total pro- 3191.
"hibition would be so dangerous, and would alienate
"so large a body of Her Majesty's subjects in India, as
"to be impossible. . . The dissatisfaction would
"be enormous, and I am not prepared to say that,
"fanned as it would be by professional agitators, it
"would not amount to disaffection, and require the
"presence of more British troops in India."

The Hon. T. D. Mackenzie, Commissioner of Customs, Salt, Opium, and Abkari, Bombay, says :—

"In my opinion to prohibit the sale of opium in 26 49.
"British India, except for medical purposes, would be
"to invite a general rising all over the country against
"what would be regarded, and, in my mind, justly
"regarded as cruel and causeless oppression."

See also *Q.* 4999. 6059. 14,059, 15,700, 15,793, 19,530, 20,425, 27,029, 27,036, &c.

NOTE M. to par. 21.—AVERAGE OF OPIUM TAKEN BY ADULT MALE CONSUMERS.

The analysis of the evidence of 85 witnesses shows that :—

| | | | Grains |
|---|---|---|---|
| The average of what 31 witnesses consider strictly moderate use is | | | 7·77 |
| " " 34 " | customary use | | 15·12 |
| " " 20 " | excessive use | | 41·00 |
| Thus the 85 witnesses give a gross average of | | | 18·53 |

But we have more precise information from three medical witnesses :—

| | | | Grains. |
|---|---|---|---|
| Vol. IV., p. 404. | Average of Dr. Huntly's record of - - - - | 100 cases | = 20·89 |
| | „ „ Surg.-Lt.-Col. Hendley's record of - - | 4,409 „ | = 21·5 |
| Vol. IV., p. 381. | „ „ Dr. Ram Roy's record of - - - | 215 „ | = 26·4 |
| Vol. II., p. 425. | Gross average of - - - - | 4,724 „ | = 21·7 |

In view of these figures, it will probably be pretty near the mark to take 20 grains as the fair average daily consumption of each adult male consumer; and that this is not, in the opinion of the authorities, an unreasonable or excessive allowance is clear from the fact that 20 grains is the authorised ration to soldiers on service, and the further fact that in Burma 45 grains a day appears to be the official estimate for each smoker.

Vol. II., App. XXVII., p. 452, 6510-3.

NOTE N. to par. 21.—TABLE SHOWING CONSUMPTION OF OPIUM BY PROVINCES.

Columns 2 to 6 are to be found in official statements; Columns 7 to 11 are calculations therefrom.

| In order of Col. 9. | Province. | Area. | Population (1891). | In 1892-93. | | To each Shop. | | Annual Consumption of Opium per Head. | Daily Dose for 1 per Cent. of Population. | Consumption is equal to 20 grains daily to One Person out of |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Shops. | Amount of Opium issued. | Area. | Population. | | | |
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
| | | Sq. Miles. | | | Lbs. | S. Miles. | | Grs. | Grs. | |
| 1 | Assam - - - | 49,004 | 5,476,833 | 882 | 109,741 | 55 | 6,209 | 141 | 38·6 | 52 |
| 2 | Berar - - | 17,718 | 2,897,491 | 478 | 37,876 | 37 | 6,062 | 91 | 24·9 | 80 |
| 3 | Bombay - - | 77,275 | 15,985,270 | 845 | 108,980 | 91 | 18,918 | 47 | 12·9 | 155 |
| 4 | Sindh - - | 47,789 | 2,871,774 | 300 | 18,052 | 159 | 9,572 | 44 | 12·3 | 166 |
| 5 | Punjab - - | 110,667 | 20,860,913 | 1,780 | 125,292 | 62 | 11,158 | 42 | 11·5 | 174 |
| 6 | Central Province - | *81,300 | *10,046,540 | †1,663 | 52,248 | 58 | 6,041 | 34 | 9·3 | 214 |
| 7 | N.W. Provinces | 83,286 | 34,254,254 | 853 | 74,984 | 97 | 40,157 | 24 | 6·6 | 304 |
| 8 | Oudh - - | 24,217 | 12,650,831 | 188 | 27,217 | 129 | 67,291 | 15 | 4·1 | 486 |
| 9 | Bengal - - | 151,543 | 71,346,987 | ‡2,095 | 159,171 | 73 | 34,056 | 15 | 4·1 | 486 |
| 10 | Madras - - | 141,189 | 35,630,440 | §1,034 | 119,470 | 136 | 34,459 | 14 | 3·8 | 521 |
| | Total - | 783,988 | 212,021,333 | 10,118 | 833,031 | — | — | — | — | — |
| | Average of British India - - - | | | | | 77 | 20,955 | 27 | 7·4 | 270 |
| | Bengal (excluding Calcutta) - - | | | | | | | $12\frac{1}{8}$ | 3·4 | 589 |

* Excluding proprietary estates.
‡ Excluding 1,264 druggists' licenses.
† Including 518 temporary licenses.
§ Including 30 poppy-head licenses.

NOTE O. to par. 21.—TABLE SHOWING EXTREMES OF LARGE AND SMALL CONSUMPTION IN SELECTED LOCALITIES.

| Province. | District. | Reference. | | Population. | In 1892-3. | | | In 1892-3. | | | To each Shop. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Vol. | Page. | | No. of Shops. | Amount sold. | | Annual Consumption per Head. | Daily Dose for 1 per cent. Population. | Consumption is equal to 20 grains daily to one Person out of | Population. | Yearly Amount sold. | Amount sold Daily (365 Days per Annum). | |
| | | | | | | | | | | | | | Oz. av. | No. of 20 Grain doses. |
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. |
| | | | | | | Maund s. c. | lbs. | Grs. | Grs. | | | lbs. oz. | | |
| Bengal - - | Calcutta - - | II. | 434 | 874,450 | 101 | 419 9 0 | 34,493 | 276·14 | 75·6 | 26 | 8,658 | 341 8 | 14·42 | 315 |
| „ - - | Jessore - - | „ | „ | 1,888,827 | 51 | 24 7 0 | 1,989 | 7·37 | 2·0 | 990 | 37,036 | 37 0 | 1·62 | 35 |
| „ - - | Dacca (Div.) - | „ | „ | 9,844,127 | 188 | 92 27 0 | 7,625 | 5·42 | 1·5 | 1,347 | 52,363 | 40 9 | 1·77 | 39 |
| „ - - | Tippera - - | „ | „ | 1,782,935 | 7 | 2 26 0 | 218 | ·85 | ·2 | 8,588 | 254,705 | 31 2 | 1·36 | 30 |
| Bombay - - | Ratnagiri - - | IV. | 280–1 | 997,090 | 8 | — | 272 | 1·91 | ·5 | 3,822 | 124,636 | 34 0 | 1·49 | 33 |
| „ - - | Broach - - | „ | „ | 326,930 | 50 | — | 8,762 | 187·61 | 51·4 | 39 | 6,538 | 175 4 | 7·68 | 118 |
| Central - - | Damoh - - | „ | 521 | 325,613 | — | 6 30 11 | 557 | 11·97 | 3·3 | 610 | — | — | — | — |
| „ - - | Wardha - - | „ | „ | 400,854 | — | 49 19 14 | 4,073 | 71·12 | 19·4 | 102 | — | — | — | — |
| N.W.P. - - | Ballia - - | V. | 93 | 942,465 | — | 2 27 0 | 220 | 1·63 | ·4 | 4,478 | — | — | — | — |
| „ - - | Benares - - | „ | „ | 921,943 | — | 140 14 0 | 11,548 | 87·69 | 24·0 | 83 | — | — | — | — |
| Oudh - - | Hardoi - - | „ | „ | 1,113,211 | — | 14 8 0 | 1,163 | 7·35 | 2·0 | 993 | — | — | — | — |
| „ - - | Lucknow - - | „ | „ | 774,163 | — | 143 24 0 | 11,815 | 106·84 | 29·2 | 68 | — | — | — | — |
| | | | | | | Seers. | | | | | | | | |
| Punjab - - | Jhang - - | „ | 119 | 436,841 | 39 | 193 | 395 | 6·33 | 1·7 | 1,153 | 11,201 | 10 2 | ·44 | 10 |
| „ - - | Ludhiana - - | „ | „ | 648,722 | 105 | 7,966 | 16,386 | 176·82 | 48·4 | 41 | 6,178 | 156 1 | 6·84 | 150 |

NOTE P. to par. 26.—ON LICENTIOUS PURPOSE FOR WHICH OPIUM IS CONSUMED.

Numerous witnesses declared that a special purpose for which opium is taken is for prolonging sexual indulgence.

Dr. Mahendra Lal Sircar, C.I.E., says :—

6327. "The chief of these pleasures which allures men to "the use of the drug is what I may call sexual "endurance.

6334. "They (smokers) told me that this invariably was the "origin of . . . the pernicious habit."

Assistant-Surgeon Shah, chief medical officer of Junagadh State, says :—

24,119. "Opium is commenced for sexual enjoyment."

Mr. Jagat Narian, B.A., pleader of Lucknow, says :—

15,672. "It is taken for immoral purposes by 80 per cent. of "the opium eaters here."

See also 2594, 12,654, 13,994, 18,210, 26,286, 26,542, and many others.

General Sardar Ratan Singh, member of the Council of Regency of the Jind State, says :—

16,262. "Those who commenced the use of opium for the "sake of pleasure in their youth are looked down "upon by society, and are considered as using it for "licentiousness."

See also 18,313, 2594, 18,264.

NOTE Q. to par. 32.—QUOTATIONS AND REFERENCES AS TO INJURIOUS PHYSICAL EFFECTS OF OPIUM.

Rai Lal Madhub Mookerjee, Bahadur, L.M.S., President of the Calcutta Medical School, says :—

8805. "It produces slow, steady, and certain degeneration "of the human system, abundantly evidenced by the "digestive disorders and emaciation that attend its "use."

Nil Ratan Sircar, M.A., M.D., Fellow of the Calcutta University, Lecturer on Forensic Medicine in the Calcutta Medical School, says :—

5833. "The power of resistance of disease generally be-"comes diminished, and the opium-eater becomes "pre-disposed to some diseases, for example, cold, "bronchitis, diarrhœa, dysentery, and dyspepsia."

Mr. Isan Chandra Roy, M.B., says :—

13,099. "The attenuated body, the peculiar withered and "blasted countenance with a characteristic gait, will "reveal the opium eater at a glance. His digestive "organs become highly disordered, and he scarcely "eats anything. His mental and bodily powers are "destroyed. In fact, he becomes impotent."

The Rev. Colin S. Valentine, LL.D., L.R.C.P., and L.R.C.S.E., &c., Principal of the Agra Medical Missionary Training Institute, when asked, "What are the results of the habit, physical, mental, and moral?" replied :—

10,007. "Deterioration in all three points. The appetite is "taken away, the digestion is impaired, there is con-"gestion of the various internal organs, congestion of "the lungs, constipation and diarrhœa consequent "upon it, pains all over the body. A man in the habit "of eating opium is upon a lower standing than a man "in perfect health."

Brigade Surgeon J. H. Condon, M.D., M.R.C.S., &c., says :—

10,551. "Physically, it reduces strength, though like alcohol "it gives a sort of fictitious strength for a short time; "after a time varying with the amount eaten daily, "they become emaciated and debilitated, miserable-"looking wretches, and finally die, most commonly of "diarrhœa induced by the use of opium."

Brigade-Surgeon Lieut.-Colonel A. Cameron, M.D., says :—

12,572. "Even when used in moderation for non-medical "purposes, the habit is not to be defended. Unless "required for some bodily ailment a man is better "without it. Its habitual use, except in the smallest "quantities, causes emaciation and enfeeblement of "the body, saps the energy and dulls the mental "faculties."

See also Q. 4042-4, 4718, 9360-3, 16,282, and many others.

QUOTATIONS AND REFERENCES AS TO NON-INJURIOUS PHYSICAL EFFECTS OF OPIUM.

Surgeon-Major R. Cobb, M.D., says :—

3704. "I believe the moderate use of opium to be quite an "innocuous habit."

Surgeon-Colonel R. Harvey, M.D., M.R.C.P., &c., says :—

3420. "The moderate way in which the great majority take "it not only does them no harm, but does them a "great deal of good."

Mr. Sita Nath Roy, banker and zemindar, and secretary to the Bengal Chamber of Commerce, says :—

2706. "The general impression, bordering on conviction, "is that the moderate use of opium is beneficial; that "it is a panacea for many diseases, and that its "tendency is to prolong life."

Brigade-Surgeon Lieut.-Colonel Purves, F.R.C.S.E., says :—

3662. "I generally agree that the moderate use of opium "in this country is rather beneficial than otherwise."

See also 9524, 12,610, 15,907, 19,228.

NOTE R. to par. 33.—QUOTATIONS AND REFERENCES AS TO INJURIOUS MORAL EFFECTS OF OPIUM.

Dr. Mookerjee says :—

8805. "Its mental and moral effects are none the less "harmful, and none the less marked. It most certainly "tarnishes the moral nature of man, weakening his "mental control over his will, and thus causing him "to be the prey of the evil and vicious habits of lying "and stealing."

Brigade-Surgeon Lieut.-Colonel Cameron, M.D., says that :—

12,573. "The general opinion amongst natives themselves is "that in positions where energy, alertness, a clear "head, or a good memory is required, an opium-eater "is not to be trusted."

Ram Kali Chaudhuri, retired Subordinate Judge, and late member of the Legislative Council of the North-West Provinces and Oudh, says :— 13,191.

"The results of the habit of opium-eating, whether "considered physically, mentally, or morally, are bad "and condemnable. The consumer, as a general rule, "becomes both physically and mentally weak and "inactive, and as a consequence loses courage, and his "moral conduct suffers so far as it depends on the "energy of body and mind, such as the performance of "duties requiring activity. In the early stage of the "habit sexual virtue is disregarded, where the initial "motive was to increase sexual vigour."

Dr. Manohar Prasad Tewarie, L.M.S., says :—

15,146. "Its use in any of its forms deadens the intellect, "impairs the physical and moral sense, induces "laziness, immorality, and debauchery."

See also 9129, 9962, 10,496, 11,684, 18,706, and many others.

QUOTATIONS AND REFERENCES AS TO NON-INJURIOUS MORAL EFFECTS.

The Hon. Sri Ram Rai, Bahadur, M.A., B.L., 11,424. member of the Lieutenant-Governor's Council, says :—

"In no way, so far as my experience goes, does it lead "to moral degradation."

Surgeon-Major J. Anderson, M.B., says :—

"In my experience it does not in any way lower the "moral tone, nor does it develop a propensity for "gambling or sensuality."

See also 26,757, 19,228, 23,303, &c.

NOTE S. to par. 34.—QUOTATIONS AND REFERENCES AS TO INJURIOUS SOCIAL EFFECTS OF OPIUM.

Dr. Isan Chandra Roy says:—

"They must satisfy their opium craving; they are "necessarily driven to have recourse to all sorts "of vicious acts, such as petty thefts, pickpocketing, "&c."

3,191. Judge Ram Kali Chandhuri (already quoted) says:—

"Where there is little or no means, the habit leads "the consumer to commit petty thefts and trickeries."

See also 12,569, 3413, 9173, 25,490, 16,902, and many others.

QUOTATIONS AND REFERENCES AS TO NON-INJURIOUS SOCIAL EFFECTS OF OPIUM.

Sir John Lambert, K.C.I.E., Commissioner of Police in Calcutta, says:—

5080. "I fail to discover any connexion between opium "and crime of a serious nature."

Mr. James Monro, C.B., formerly Commissioner of Police in Bengal, now engaged in missionary work, says:—

5463. "The conclusion which I came to from wide ex- "perience was that so far as regards crime, opium has "no perceptible influence in causing it."

See also 3184, 14,414, 19,749, 19,797, 25,583.

NOTE T. to par. 35.—PRO-OPIUMISTS' EVIDENCE AS TO PHYSICAL EFFECTS OF EXCESSIVE USE.

Surgeon-Major J. Anderson, already quoted, says:—

14,226. "When *taken to excess* it causes both moral and "physical deterioration. It produces emaciation, gas- "tric disorder, loss of appetite, gives premature senile "expression, and no doubt shortens life. Morally, over- "indulgence makes the victim idle and timid and "engenders a habit of exaggeration."

Surgeon-Major G. W. P. Dennys, civil surgeon in the Punjab for many years, says:—

18,733. "A confirmed excessive opium eater is generally a "physical and mental wreck, emaciated to an excessive "degree, and incapable of performing any ordinary "work. He is a deplorable object to behold. . . . "Excessive opium eaters have no stamina whatever, "and succumb to comparatively trivial ailments."

Mr. G. B. Prabhakar, L.R.C.P., a medical practitioner of Bombay, says:—

25,989. "Opium when taken in excess impairs the digestive "system in general, engenders lazy habits, causes "dulness of intellect, and produces anæmia and "emaciation."

See also 12,608, 24,675, 25,657, 26,022, &c.

PRO-OPIUMISTS' EVIDENCE AS TO MORAL EFFECTS OF EXCESSIVE USE.

Lieut.-Colonel A. J. F. Reed, in command of 29th Punjab Infantry, says:—

18,706. "The habitual (*i.e.*, excessive) opium eaters are "marked men in the regiment, and are not trusted "like the rest."

Surgeon-Major T. R. Mulroney, M.D., referring to those taking opium in large doses, says:—

15,948. "They are regular drunkards, a depraved lot, gener- "ally belonging to the criminal class, thieves and "burglars."

See also 24,087, 26,022, &c.

NOTE U. to par. 35.—DIFFICULTY OF DISCONTINUANCE OF HABIT.

The personal experience of Mr. Datta may be usefully cited:—

"I took opium myself for three months, for chronic "diarrhœa and dyspepsia. The first day it acted like "magic, but gradually the dose had to be increased, "until I used to take 20 grains of it. I keenly felt "the after effects and thought of relinquishing. It "took me some time before I gave it up by gradually "reducing the doses.

"If I did not take opium at the regular time, when 10,733.
"I was used to taking it, I was seized with nausea, "pains all over the body, a sort of uneasiness which "cannot be described, a bad scalding sense of uneasi- "ness all over the body. Even if I took a lesser dose "the diarrhœa would reappear, and with greater "violence. I could not retain the smallest quantity of "food, and I was not able to work.

"It took me about four months to relinquish the 10,754.
"habit, gradually reducing the dose all that time. 10,755.
"I took other remedies to restore my health. I had 10,756.
"to place myself under other treatment."

There is abundance of other uncontradicted evidence to the like effect.

See also Q. 2593, 18,927, 25,513, 5913, 16,219, 28,168, and many others.

NOTE V. to par. 36.—COMPARATIVE EFFECTS OF OPIUM ON NATIVES OF EUROPE AND OF INDIA.

Surgeon-General Sir Wm. Moore, K.C.I.E., Q.H.P., was asked by Sir Wm. Roberts:—

*Q.* "You would not admit it was due to some pro- 1061.
"found constitutional difference."
*A.* "No, I don't think so."
*Q.* "But of course you would not be positive." 1062.
*A.* "I do not think the constitutional difference has "anything whatever to do with it."

Surgeon Major-General Rice, head of the Indian Medical Department, says:—

"I have satisfied myself in my professional practice 2199.
"that Europeans are more tolerant, that is, require "larger doses of opium than natives, bulk for bulk."

Dr. Rice further says:—

"To produce the same effect from a medicinal dose 2200.
"of opium in a European you would have to give a "larger quantity of it than you would to a native."

Hon. D. R. Lyall, C.S.I., says:—

"The ordinary native takes an amount of opium 3205.
"that would be almost laughed at in England as a "dose of opium."

Surgeon Lieut.-Colonel J. McConaghey, M.D., was asked by Sir W. Roberts:—

*Q.* "Have you been able to notice, or been led to 12,626.
"the opinion, that there is a difference between the "European constitution and the constitution of the "natives of India, in their relation to opium?
*A.* "I do not know that there is much difference.
"I have had Europeans under my treatment who 12,631.
"were quite as much addicted to the use of the drug "as natives.
"Taking the population of the Europeans I meet 12,632.
"with, it will be very nearly the same proportion."

Dr. G. R. Ferris, M.R.C.S., was asked by Sir W. Roberts:—

*Q.* "Has it never struck you that there was a 4492.
"difference of tolerance, depending upon race or "climate, or food, or the environment of Europeans "on the one hand, and of the inhabitants of India on "the other?
*A.* "No. In Calcutta I have seen the greatest "quantity taken by Europeans. The maximum I have "seen has been taken by a European."

Lieut.-Colonel A. J. Wilcox, M.D., was asked by Mr. Mowbray:—

*Q.* "Have you had any experience of Europeans 19,259.
"taking opium in this country?
*A.* "Yes. I have stated that the worst cases I have "met with have been Europeans."
*Q.* "You think that the effect of opium on the 19,262.
"Europeans who take it is worse than on the natives?
*A.* "I do not think so. These cases I speak of were "cases of extreme abuse."

See also 3387, 21,298, 19,363, 24,706.

NOTE V. V. to par. 38.—QUOTATIONS AND REFERENCES AS TO PROHIBITION OF OPIUM, EXCEPT FOR MEDICAL PURPOSES.

8809. Rai Lal Madhub Mookerjee, Bahadur, President of the Calcutta Medical College, approves of the production of opium for medical use only:—

"To that extent and no further."

8814. Dr. Nil Ratan Sircar thinks it would be desirable to prohibit the sale of opium, except for medical purposes:—

8845. "So far as I can gauge public opinion, they (the "people of India) will support it (prohibition)."

Dr. Isan Chandra Roy says:—

13,108. "I am for limiting the use of opium strictly for "medical purposes. Its use as a narcotic indulgence "should be prohibited by laws."

13,163. "And you believe that such a prohibition would be "received with favour by the people?—Yes."

19,519-21. Babu Bepin Behari Bose, M.A., a barrister at Lucknow, is in favour of prohibition, except for medical purposes, and says that such action would be supported by the general opinion of the country:—

19,522. "The opinion of the country is very settled on this "point—that opium eating is not good at all."

18,305-6. Pandit Gopi Nath, assistant manager of three newspapers, and secretary of two bodies of orthodox Hindus, is in favour of prohibition except for medical purposes, and thinks it would be generally approved:—

18,307. "It is nonsense to think that because opium is "prohibited there will be any riots."

Babu Ganga Prasad Varma, proprietor of two native newspapers at Lucknow, and a member of the Municipal Board, says:—

14,523. "It would be a blessing to my city if the Government "stops the sale of opium, and strictly orders that none "but those who require opium for medical purposes "should have it."

14,525. "I think the majority of the opium smokers themselves will agree with me."

9139. Rai Goonabhiram Borooah, Bahadur, retired Extra Assistant Commissioner of Assam, thiks it would be desirable to prohibit the use of opium except for medical purposes:—

9140. "All but opium sellers and opium eaters will be in "favour of it. Even they would like it because their "children would be saved."

Gobind Ram Chowdry, Tahsildar, Assam, says:—

19,288. "I wish it could be prohibited except for medical "purposes."

19,289. "The great majority, not being opium consumers, "would certainly support it. . . . There is nothing "to fear from the natives of the country in regard to "prohibition."

Mr. Kali Sankur Sukul, M.A., Professor in the City College, and Rector of the City Collegiate School, says:—

9349. "The sale of opium, except for medical purposes, "should be stopped."

9351. "Undoubtedly public opinion would favour the total "prohibition of opium, except for medical purposes, "especially if the country were assured that no other "taxation would follow."

See also 9932–3, 13,389, 15,009–10, 15,626–9, 18,261–2, 27,843–4, 11,692–3, 10,504–5, 4583, 16,569–76, 4298, 8021–2, 8342, 18,033–36, 19,733, 24,301, 8646–51, 9053–4, 9467–8, 11,449, 23,457, 24,335–6, 26,518, 26,587, and nearly a hundred others.

NOTE W. to par. 39.—FURTHER EVIDENCE AS TO OPIUM-SMOKING.

Mr. G. M. Ogilvie, Second Financial Commissioner for the Punjab, said in reference to smoking:—

15,688. "This use of opium is generally reprobated. It is "not practised by the peasantry, and is, I believe, "generally confined to the vicious classes of the "population."

He added an opinion that in consequence of the discontinuance in the Punjab of licensing the sale of chandu and madak, the practice of smoking is rapidly decreasing in that province. 15,714.

Mr. T. Stoker, Commissioner of Excise for the North-west Provinces and Oudh, says:—

"I have nothing to say in favour of opium smoking. 19,527.
"Speaking of these provinces, I regard it as a low and "vicious habit, practised, broadly speaking, by low or "by vicious people. It would be unreasonable to say "that any physical or moral deterioration which may "have been observed in opium smokers is necessarily "due altogether to that particular practice and not "to other demoralising habits and associations or "physical infirmities. . . . . But in these parts "people who pursue the habit do in my opinion often "or generally suffer from it or its surroundings. The "policy of the Government of the North-Western "Provinces has always been directed to repress and "check the practice and has been attended with "success."

Surgeon-Major T. R. Mulroney, M.D., civil surgeon at Amritsar, referring to that district, says:—

"The class of opium smokers is very limited. Four 15,945.
"years ago the opium-smoking shops were closed by "order of the Government, and since then opium-"smoking has apparently decreased; it is confined to "a very few, generally a disreputable, debauched, and "depraved lot."

Numerous native witnesses, some holding important official positions, gave similar evidence, particularly Mr. K. G. Gupta, Excise Commissioner of Bengal, who said:—

"The effects of chandu and madak smoking are, 497
"however, distinctly harmful in the case of Indians, "specially when they are unable to obtain nourishing "food. Opium eating is not looked down upon, nor "does it cause loss of respectability. But smoking "chandu or madak is regarded as a degrading habit."
". . . the chandu or madak smoker is usually 4976.
"known by his appearance, and he is also generally "believed to have deteriorated in many respects."
"I think the effects of madak or chandu smoking in 4977.
"this country cannot well be concealed."

NOTE X. to par. 48.—OPIUM REVENUE.

According to the figures in App. VIII. the average of the net opium revenue for the four years ending 1892–3 was Rx. 7,299,249. Vol. II., p. 343.

The Budget Estimate for 1893–4 was Rx. 5,967,104. Vol. II., p. 343.

According to the "Financial Statement," the Budget Estimate for 1894–5 is - Rx. 4,138,200, p. 67, Blue Book 92 of 1894.
to which must be added the net revenue from excise, which for the average of the five years ending 1893–4 was - - - Rx. 985,129 Vol. II., p. 343.

making a total of - - Rx. 5,123,329

which taking the rupee at 1*s.* 1*d.* gives 2,775,136*l.*

NOTE Y. to par. 32.—MEDICAL EVIDENCE AGAINST THE NEW THEORY THAT OPIUM IS A PROPHYLACTIC AGAINST FEVER.

A new theory—never heard of,—
4317; 4710; 8824–36; 10,617; 10,684; 11,851–69; 15,868; 16,168; 16,665; 19,378–80; 24,173.

Not used or recommended,—
3619; 4070; 4174–6; 8828; 12,476; 12,585; 12,633–4; 12,695; 13,337; 16,876; 17,275–7; 17,508; 24,777.

Not prescribed, even by pro-opiumists,—
3574; 11,895–6; 16,879–81; 19,258; 19,407; 21,459–60; 24,675; 25,383.

Prophylactic properties denied,—
4710; 5837; 16,167; 16,558; 16,902; 17,152; 17,772–6; 19,203; 25,308.

Not known or used by the natives as a preventive,—
4277–80; 5836; 17,173; 19,406; 24,177–8 25,361; 25,727; 25,861; 25,957; 26,041.

NOTE Z. to par. 50.

Osgathorpe Hills, Sheffield,
DEAR LORD BRASSEY, January 21, 1895.

I HAVE carefully considered your letters of the 2nd and 7th instant, the latter enclosing a copy of your letter to Sir James Lyall of the same date.

In the former of these letters you point out that if I am unable to agree with you and the majority, it will be "unprofitable to enter into a prolonged discussion," and that it will become my duty to state my own views in a dissentient report. You add that in the report which you will submit you "do not suppose tat there will be "found much room for amendment," and that "taking this view" you "do not anticipate that our further de- "liberations round the table need occupy many days."

In your letter to Sir James Lyall you "strongly "insist that the completion of our work has become "of extreme urgency," and you say that "having "received two communications from the Secretary of "State within the last few days, I feel that my duty "calls for some decided course of action. I do not "believe that long discussion round the table will be "necessary or desirable." * * * "I shall in any "case relieve the Commission from further collective "work on the 26th."

Believing that full examination and consideration was the usual course, I was prepared to give all the time needful for the purpose. But as the majority of the Commission will probably be guided by your wishes in the matter, that course appears to be precluded.

Under these circumstances, it would not be right for me to attempt to discuss a few statements or arguments here and there in the Majority Report; for were I to do so, it would convey the impression that I was satisfied with whatever I did not challenge, and might be open to other objections. I must therefore confine myself, as you suggest, to a statement of my own views, some of which, I believe, are in accordance with those of Mr. Pease.

Entirely apart, however, from the considerations already referred to, I think it right to point out that in your letter to Sir James Lyall, you advise "personal "revision of the draft as now being circulated on the "part of each member of the Commission," adding that you would go "carefully through each revise and "endeavour to incorporate all suggestions which do "not conflict with the main conclusions."

Four new portions or chapters, apparently intended to form part of the report, have been circulated within the last few days; a further chapter has come to hand this morning, and at least three or four portions or chapters have yet to be supplied.

As we are to meet the day after to-morrow, it is impossible that your wish as to revision by each member, and the incorporation of suggestions, can now be carried out; and it cannot be right or proper that the Commission should adopt, as its own, any chapters or documents which its members have not had adequate means and opportunity to consider and approve.

I remain,
Dear Lord Brassey,
Yours faithfully,
HENRY J. WILSON.

The Right Hon. Lord Brassey, K.C.B.,
Chairman Royal Commission on Opium.

# C.—APPENDIX TO MR. H. J. WILSON'S DISSENT.

## MEMORANDUM ON THE ATTITUDE OF THE AUTHORITIES IN INDIA.

1. While in India I was obliged to express disapproval of the action of the Government of India, and of various officials, in relation to the Commission. As the after proceedings did not remove but strengthened this objection, it is due to the Commission and myself to place the main grounds of this objection on record.

In doing so I readily acknowledge the difficult position of the Indian authorities. Rightly or wrongly, they appeared to hold in the main that the good government of India is bound up with the Opium Revenue. The difficulties arose from assuming an impartiality on the part of the Indian authorities which could not be, and was not, continuously enforced.

2. Some of the circumstances to which I am about to refer were stated in a letter addressed by me to Lord Brassey while we were in India, but the consideration given to them appeared to me inadequate. I have here omitted some and added others.

3. On the 18th November 1893 it transpired that a telegram had been sent from the Government of India to the Secretary of State on the 15th August, containing the following passage:—"We shall be prepared to "suggest non-official witnesses, who will give inde- "pendent evidence, but we cannot undertake to "specially search for witnesses who will give evidence "against opium. We presume this will be done by "the Anti-Opium Society." As anti-opium evidence was easily available, without any special search, this official statement seemed to show that the authorities were taking up a partisan attitude.

4. Two days later a letter from Lord Lansdowne, then Viceroy of India, to Lord Brassey, Chairman of the Commission, was passed round to the members for perusal. It contained a statement in favour of the existing opium system, and against interference with that system as likely to lead to serious trouble. This appeared to me a departure from the judicial attitude which might have been expected from Her Majesty's Representative.

5. The Government of Madras was not allowed to present its own case to the Commission, but was instructed by the Government of India (13th December 1893) to send to Calcutta abstracts of evidence of proposed witnesses. A letter of similar purport was addressed on the same day to the Resident at Hyderabad with regard to the evidence of other witnesses. Similar instructions were given to the Government of the North-West Provinces. I submit that this requirement was distinctly detrimental to the free expression of opinion and unprecedented in the history of Royal Commissions.

6. An official letter was sent [30th December 1893] from the Government of the North-West Provinces and Oudh, to all Commissioners of Divisions, and other officials in these provinces, calling attention to the fact that some officials had "communicated direct with the "Secretary of the Commission, submitting to that "officer abstracts of the evidence," and pointing out "that there is no authority for this procedure, and "....that all communications should be addressed "to this Government." Here, again, the authorities seemed determined that no evidence should be submitted to the Commission which had not been subjected to official scrutiny in high quarters. Moreover, this circular was not communicated to officials alone, but even to non-official persons who were intending, and were considered qualified, to give evidence on the subject of the inquiry.

7. At Benares, Mr. Isan Chandra Roy, M.B., stated that he had been officially invited to be a witness and to furnish an abstract of his intended evidence. After he forwarded his statement, he was informed by official letter, in which no reason was assigned, that his evidence was not required. The fact that he entertained anti-opium opinions was subsequently proved by his volunteered evidence before the Commission. Other proposed witnesses at Benares were similarly treated.

8. At Bankipur, a list of witnesses intended to be called on the 3rd January was supplied to me. It included the name of Rai Bahadur Jai Prakash Lal, C.I.E., Dewan of Dumraon. This gentleman represents a large estate in which poppy is extensively cultivated. He was not called. Information from two sources led me to believe that his evidence would not have been altogether favourable to the Government. The official version of this circumstance will be found in Vol. V., p. 355, paragraphs 4 to 10, and as I have commented on it in the Appendix to my dissent from the Report of the majority of the Commission, I will only add a strong expression of my opinion that as the Dewan was not called on the 3rd January, the Commission ought to have been informed that he was present on the 6th January. The withholding of that information was not creditable to those concerned.

9. At Lucknow 24 witnesses were called at the instance of the Government, 23 of whom gave evidence generally favourable to the Government case. Thinking that a different kind of evidence might have been omitted, Mr. R. M. Dane, who accompanied the Commission to manage the case on behalf of the Government of India, was, at my request, asked by Lord Brassey to put in the list of persons who had been asked by the authorities to give evidence at Lucknow, together with such abstracts of their evidence as had not already been produced. I thought the Commission was entitled to know the method that had been followed in making the selection of witnesses, and that the original list of witnesses, with the marks and notes upon it, would throw light on the subject. The list was not produced. It was stated that the names of Lucknow witnesses were included in the general list of all the witnesses for the North-West Provinces and Oudh, but that circumstance seems quite irrelevant, and an altogether insufficient reason. However, the names of 17 rejected witnesses extracted from the list were supplied, together with the abstracts of evidence of 16—four of whom seem to entertain anti-opium views, and four others make some strong observations against the use of opium. I would draw particular attention to the fact that two of these gentlemen, namely, Mr. P. Wyndham, C.S., Assistant Commissioner and Excise Officer, Sultánpur, and Mirza Muhammad Beg, Deputy Collector of Basti, make the important statement that in their opinion revenue and rents derived from land would not be sensibly affected by the prohibition of poppy cultivation.

10. At Bombay another instance of the anxiety of the authorities to prevent the free communication of information on the opium question was brought to light by the Rev. A. W. Prautch. An official circular had been issued desiring that information applied for by Mr. Ernest Hart, Chairman of the British Medical Association, should not be replied to, on the ground that "to reply to such applications might prove "embarrassing." Vol. IV., p. 373

11. I learned at Bankipur, that the police at Gya had been searching out the movements of two of my friends and myself for the purpose of ascertaining with what persons we had had communication. As this matter formed the subject of protest on my part before the Commission, I need only refer to the Minutes of Evidence. I do not know whether on any other occasion we were similarly tracked. Vol. III., pp. 10, 24, 25.

12. Perhaps the most notable instance of the Government method of preparing for the fair and honest inquiry expected in England will be found in the correspondence relating to the Native States of Rajputana. On the 9th September 1893, the Government of India directed the agent of the Governor-General in Rajputana to invite the durbars of the Native States to appoint witnesses to give evidence before the Commission, and also to nominate a British officer to give evidence as to those States. An abstract of his evidence was, as in other cases, to be forwarded to the Government of India. Accordingly, on the 22nd September, the agent, Colonel G. H. Trevor, sent out a circular "to all "political officers in Rajputana," desiring that the durbars [courts] of the Native States should be invited to nominate witnesses, and requesting the British officers addressed to furnish information and statistics. On the 5th October, Lieut.-Colonel Abbott was appointed to give evidence himself, as well as to produce the witnesses, and arrange the evidence from the Native States—the request for a draft of his evidence being again repeated by the Government of India. Colonel Abbott then prepared a note on opium, which will repay careful perusal. He indicated the principal heads of evidence, and, among other things, suggested "that "some stalwart Sondhia, Mewati, and Rajput lumbar- "dars and patels should be among the witnesses "selected." He made numerous other suggestions as to Vol. IV., p. 384. Vol. IV., p. 385.

matters of detail entirely in favour of the existing state of things, and without any provision for ascertaining and proving any matters of an adverse character, either of fact or of opinion. He advised that the witnesses "should reach Ajmere a week in advance" of the Commission, and supplied the reason, namely, "that "I may become acquainted with all, and see if each "one understands on what points he is required to "give evidence." He also made careful suggestions for preparing ample claims for compensation. On the 29th November "all political officers" were again addressed on the subject as follows:—"Mr. R. M. "Dane, C.S., the officer selected by the Government of "India to advise local administrations in the matter of "preparing for the inquiry to be held by the Opium "Commission, has had an opportunity of seeing the "previous correspondence on that subject in this office, "and has pointed out that the great importance of the "inquiry . . . . has apparently not been fully "appreciated . . . . that Rajputana is vitally "interested in the inquiry," and that "there should "be no lack of evidence, both official and non-official, "to prove before the Commission the full extent of "their rights and interests in opium." The suggestion was repeated that witnesses were, if practicable, to be "ready in Ajmere about a week in advance of the "Commission's arrival there." Taken altogether, this correspondence, is, in my opinion, as one-sided as the instructions in a brief in a partisan cause, and the evidence, which in accordance with these suggestions, was prepared and put before the Commission at Ajmere, was of an unusually partial and one-sided character.

Vol. IV., p. 336.

Vol. IV., p. 387.

13. The instances I have given as to the action of the authorities appear to me inconsistent with any real desire on their part that the whole of the facts should come in a perfectly unbiassed manner before the world. Whatever the Government of India intended by their determination not to seek for evidence of an anti-opium character, its action was likely to be understood, and was undoubtedly understood, to mean that pro-opium evidence was to be sought for, and anti-opium evidence was not.

See Par. 4.

14. Lord Brassey himself had early recognised the true position of the Government, as is clear from his statement to Mr. Alexander, the secretary of the Anti-Opium Society, at the close of his evidence before the Commission:—"We all appreciate that in the encounter "in which you are engaged with the Government of "India upon its own ground you are placed in circum- "stances of no ordinary difficulty."

Q. 2588.

15. My contention on this subject is, that having regard to the nature of British authority in India and to the moral timidity of many residents in India, both Native and European, it was the duty of the Government, in the presentation of evidence to be adduced before the Commission, to have publicly assured the people generally that no harm would come to them by giving free expression to their views, however opposed such views might be to the interests of the Revenue, or the known predilection of English officials. In fact it should have given practical effect to Mr. Westland's message read by the Chairman at the commencement of the proceedings on the 27th December:—"The "Government, however, will not reply to such evidence "[that is anti-opium evidence] as a defendant, but "will merely pursue their course of enabling the "Commisson to fully ascertain the actual facts."

Vol. II. p. 274.

16. In view of the various incidents which came to my knowledge, and some of which are here set forth, I am driven to the conclusion that the authorities in India have not pursued their declared "course of "enabling the Commission to fully ascertain the actual "facts."

HENRY J. WILSON.

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## MEMORANDUM V.

### TELEGRAM.*

*Private.*]

From HEWETT to BAINES.
(*Simla*) (*London*)

MAHARAJA DARBHANGA telegraphs eighth:—

"Kindly telegraph Lord Brassey following summary of my Note:—

"First, the opium trade with China should not be suppressed unless China specially asks for suppression. Otherwise it only means sacrifice of a large revenue, fresh taxation, and probably great discontent, without any benefit to any class of people. The Chinese Government, and not we, are the best judges of the evils and benefits of opium in China.

"Second, non-medical use of opium has not been proved an unmixed evil. It is largely used as a harmless stimulant, and people should not in such case be deprived of its use. Local Governments and local bodies like the district boards should, however, be empowered to put on necessary restrictions in localities where opium-smoking and opium-eating becomes an abuse.

"Third, the Benares system of direct dealing with ryots should be introduced in Behar, and the price paid to the ryots should be raised in proportion to rise in wages and price of food.

"Fourth, any sudden interference with opium policy of Native States, like Indore, is injudicious, and likely to interfere with their financial equilibrium."

* Received at 4.45 p.m. on 9th April.

## MEMORANDUM VI.

### On the Course of the Movement in England against the Opium Trade, with especial reference to the Action taken in connexion with it in Parliament

By the Secretary.

For many years before the movement against the opium trade between India and China assumed a definite shape, objections had been raised by individuals to the traffic on the grounds of the injury caused by the use of the drug to the population of the latter country. The question was made the subject of special inquiry by the Select Committees of the Houses of Parliament which reported between 1830 and 1832 on the general trade relations of China with both India and the United Kingdom. In arriving at a decision, the House of Commons was apparently influenced by two main considerations; first, that the trade, though contraband in name, was conducted with the full connivance and aid of the Chinese authorities, and, secondly, that in the financial circumstances of India, the revenue derived from this branch of exports could not be abandoned without seriously impeding the development of the country.

Hansard, 18, p. 709–10, 770.

2. When the events of 1839–40 came before Parliament in the latter year, the opium question, though mentioned in the Resolution moved in the House of Commons by Sir James Graham, was not placed in the van of the attack, nor was it more than casually mentioned by most of the leading members who took part in the discussion, and who were, presumably, acquainted with the circumstances in which the trade had come under the consideration of the House seven years before. A Motion specifically condemnatory of the traffic in the drug had apparently been contemplated by Lord Sandon and Sir George Staunton, but it was not brought forward, as it seems from the speech of Sir Robert Peel on the occasion, that it was considered desirable to conduct the attack on the Government on other lines. The Resolution, as moved, ran as follows:—

Hansard, 53, pp. 670–950.
Do. p. 689.
Do. p. 740
Do. p. 901

"It appears to this House, on consideration of the papers relating to China, presented to this House by command of Her Majesty, that the interruption in our commercial and friendly intercourse with that country, and the hostilities which have since taken place, are mainly to be attributed to the want of foresight and precaution on the part of Her Majesty's present advisers in respect to our relations with China, and especially to their neglect to furnish the Superintendent at Canton with powers and instructions calculated to provide against the growing evils connected with the contraband traffic in opium, and adapted to the novel and difficult situation in which the Superintendent was placed."

Hansard, 53, p. 704.

The wording of the Resolution and the course of the Debate which followed shows clearly that the point of attack was not the cause or conduct of the war, but the attitude of the Government, or, more correctly, of an individual Minister, in connexion with the transactions at Canton which preceded the outbreak of hostilities. In the division which took place on the Motion, the Government of the day vindicated the reputation of Lord Palmerston by the narrow majority of nine, in a House of 533 members.

3. About a month afterwards Lord Stanhope presented a petition from a meeting recently held in London, denouncing the opium trade and deprecating the war with China. The Earl of Rosebery drew attention to the language used, and to the fact that it has been resolved that the terms of the petition should be translated into Chinese and presented to the Emperor of China through Commissioner Lin, the leader of the hostilities against the British in Canton. Lord Stanhope thereupon announced his intention of bringing the question of the continuation of the opium trade between India and China directly before the House of Lords; and a few days later moved—

Hansard, 53, p. 1158.

"That an humble address be presented to Her Majesty, to express to Her Majesty the deep concern of this House in learning that an interruption has occurred in the friendly relations and commercial intercourse which has so long subsisted with the Chinese Empire; and to represent to Her Majesty that these calamities have, in the opinion of this House, been occasioned by British subjects having persevered in taking opium to China in direct and known violation of the laws of that Empire; and to request that Her Majesty will be graciously pleased to take immediate measures for the prevention of such proceedings, which are so dishonourable to the character and so detrimental to the interests of Her subjects, and to assure Her Majesty that if any additional powers should be found requisite for the purpose, this House will readily concur in granting them to Her Majesty."

Hansard, 54, p. 26.

The Motion was opposed by Lord Melbourne as the Head of the Government. The Duke of Wellington, as Leader of the Opposition, moved the previous Question, which was carried without a Division.

4. In 1843 the opium question was brought directly before the House of Commons by Lord Shaftesbury, who, as Lord Ashley, laid on the table petitions from the

London, the Baptist, and the Wesleyan Missionary Societies in China on the subject, and moved the following Resolution :—

"That it is the opinion of this House that the continuance of the trade in opium and the monopoly of its growth in the territories of British India is destructive of all relations of amity between England and China, injurious to the manufacturing interests of the country by the very serious diminution of legitimate commerce, and utterly inconsistent with the honour and duties of a Christian kingdom; and that steps be taken as soon as possible, with due regard to the rights of Government and individuals, to abolish the evil."

The Head of the Government, Sir R. Peel, pointed out that the adoption of such a Resolution would have material effect upon negotiations then in progress between the two countries, and on this consideration the Mover withdrew his proposition.

Hansard, Vol. 144, pp. 1391–1846.

5. The question, though occasionally the subject of questions to Ministers, was not again formally debated in Parliament till 1870. It was casually brought into the debate of 1857, regarding the second war with China, but as it was recognised that opium had nothing to do with the rupture on that occasion, the issue was narrowed, at least professedly, to the conduct of the British Agent at Canton in precipitating a conflict which, as in the case of 1839–40, could not be avoided in the circumstances created by the attitude assumed by the Chinese authorities relative to their Treaty engagements.

Hansard, 1870. Vol. 201, p. 516. Mr. Gladstone, 1875, Vol. 225, p. 575 Sir M. Stewart, 1880, Vol. 252, p. 1232. Sir J Pease, Mr. Gladstone, p. 1252. Vol. 335, p. 1146. Mr. S. Smith.

6. It is obvious from the line taken by most of the speakers, as well as from the political history of the time, that, just as in 1840, the particular subject of debate was little more than a convenient cover for a parliamentary attack upon the general foreign policy of the Government of the day or, rather, of its chief representative. As it appears that the war of 1856–58 has been on several occasions quoted as the "second opium war" by a responsible statesman as well as by some of the leaders of the movement against the opium traffic, it is well to give the Resolution moved by Mr. Cobden on this occasion :—

Hansard, 1857, Vol. 144, p. 1421.

"That this House has heard with concern of the conflicts which have occurred between the English and Chinese authorities in the Canton River; and, without expressing an opinion as to the extent to which the Government of China may have afforded this country cause of complaint respecting the non-fulfilment of the Treaty of 1842, this House considers that the papers which have been laid upon the table fail to establish satisfactory grounds for the violent measures resorted to at Canton in the late affair of the *Arrow*.

"That a Select Committee be appointed to inquire into the state of our commercial relations with China."

Hansard, 144, p. 1846.

This was carried by a majority of 16 in a House of 510 Members. Lord Palmerston appealed to the country, which responded by returning him to power with an increased majority.

7. Shortly after the assumption of the Government of India by the Crown, suggestions were made by Sir R. Hamilton and Sir W. Muir for replacing the Bengal, or monopoly system, by that of Malwa, so that the revenue from opium might be levied by a duty on export. A few years later the same proposal was brought forward by Sir C. Trevelyan, Financial Member of the Governor-General's Council, and it was renewed by Sir W. Muir when he occupied that office in 1868. In an Appendix to the Proceedings of this Commission is given a general abstract of these propositions, with the correspondence to which they gave rise.

II., p. 371.

8. It may be noted that throughout, the fiscal side of the question is ever in the van, and, whatever might be the change suggested, it was always assumed that the financial results would be at least as favourable as those under the system it was proposed to displace, and in some instances it was anticipated that they would be even more lucrative than the latter. Sir C. Trevelyan considered that an expansion of trade would follow the substitution of sound commercial interests for a State monopoly. Sir R. Hamilton held that the revenue was likely to rise in consequence of throwing open the cultivation of the poppy freely and without restriction to any landholder who chose to engage in it. Sir W. Muir proposed to retain the system of licensing cultivation and manufacture, but he thought that the private manufacturer would be able to obtain from the cultivator the whole of the produce, instead of the portion, which, under the monopoly he considered, alone reached the State storehouse. It appears to have been assumed, too, by all who advocated the change, that China must have opium, and could not grow it at home; so that, as Sir W. Muir put it, by the adoption of a uniform system and rate of taxation, the Government of India would have the China market far more under its control than before, because "the pass duty for all India "would regulate the prices which the Chinese will always be prepared to give for a "commodity they cannot do without, and which, practically, India alone can supply."

This assumption, so far as the position of India in the opium market is concerned, has long since proved untenable. On the moral side of the question, where it is brought forward, both Sir R. Hamilton and Sir W. Muir confined themselves to the advantage of removing the stigma which they mention as being attached by some, to the direct connexion of the State with the production and sale of opium, and which would disappear under the plans they respectively suggested. To the trade itself no objection seems to have been raised. It is not necessary to enter into the details of the schemes, as the latter, though in accordance with the earlier views on the subject, are connected with a phase of the general question which has now almost, though not entirely, passed away. The Society now engaged in promoting the movement against opium has informed the Commission, through its Secretary, that Sir W. Muir's scheme has been repudiated by it. So far as their efficacy as a substitute for the Bengal system is concerned, reference should be made to the despatch of Lord Ripon's Government of the 19th of December 1881 in which the subject is exhaustively treated.

Hansard, Vol. 68, p. 386. Vol. 225, pp. 584,596. Vol. 252, pp. 1245, 1280. Vol. 305, p. 288. Debates, XIV., p. 603. Friend of China, xi. p. 290. I. ,475. II., p. 378, and Return, C. 3378 of 1882.

9. In 1869 the subject was brought to notice in the House of Commons during the discussion on the Indian accounts, and those who advocated the abandonment of the revenue from opium were challenged by a private member (Mr. Denison) to bring the question fairly before the House on a definite issue. Next year, accordingly, Sir Wilfred Lawson moved—

Hansard, 198, p. 1352.

Hansard, 201, p. 480.

"That this House condemns the system by which a large portion of the Indian revenue is raised from opium."

The Motion was opposed by the Government of the day, Mr. Gladstone observing that the question was one that should be dealt with, not by abstract Resolution, but by Bill, in order that the Mover might show that he had thought the matter out, and give the House some means of judging whether the measures he proposed were adapted and well proportioned to his ends.

On a Division in a House of 196, the Motion was lost by a majority of 104.

10. The autumn of 1874 saw the foundation of the Society for the Suppression of the Opium Trade, which has been mentioned more than once in the course of our Report. Its first President was the late Earl of Shaftesbury, who was succeeded by Sir Joseph Pease. According to the evidence given before the Commission by Mr. J. G. Alexander, its present Secretary, the Society, has at various times advocated or supported different measures in furtherance of the object for which it was established. In its early years its action appears to have been directed mainly against the military and diplomatic influence under which it considered that the admission of Indian opium into China was maintained. Whilst, therefore, the Chefoo Convention was under consideration, the Society was strenuous in its endeavour to secure the ratification of that Agreement. Regarding the general question, the following shades of opinion have been from time to time countenanced by the Society :—

1874.

I., 468. II., 247–8.

I., 2, 112, 461.

(*a.*) The abandonment of the monopoly in Bengal, in order that the trade might pass from the hands of the Government into those of private traders, leaving the former free to regulate and repress the operations.

I., 147. Hansard, 225, p. 617; 260, p. 764; 335, p. 1143.

(*b.*) Gradual suppression of the trade, with the co-operation, if obtainable, of the Chinese Government.

(*c.*) Immediate and total suppression of the production and sale of opium in India except for medical purposes.

345, p. 278.

11. In the middle of the year following the organisation of the above Society Sir Mark Stewart called the attention of the House of Commons to certain evidence given before the Indian Finance Committee of the preceding year, and moved :—

June 1875.

Hansard, 225, p. 571.

"That this House is of opinion that the Imperial policy regulating the opium traffic between England and China should be carefully considered by Her Majesty's Government, with a view to the gradual withdrawal of the Government of India from the cultivation and manufacture of opium."

A House of 151 Members divided on the Motion, which was negatived by a majority of 37.

12. In June 1880, Sir Joseph Pease re-introduced the subject on the question of the House going into Committee of Supply.

Hansard, 252, p. 1227.

The Motion proposed was as follows :—

"That this House is of opinion that Her Majesty's Government, whilst asking admission into China for all exports from Great Britain, India, and British Possessions on the terms granted to the most favoured nation,

should not, in carrying out existing, or negotiating new, Treaties, insist upon terms facilitating the introduction of opium, which the Government of China is unwilling to grant; and this House is also of opinion that Her Majesty's Government should encourage the Government of India to take steps for their gradual withdrawal from participation in the cultivation of the poppy and the manufacture of opium, and dependence upon a revenue derived from its cultivation and transit."

As an Amendment to the Question had already been moved and negatived, no further Amendment could be proposed. Sir Charles Cameron, therefore, moved the adjournment of the Debate, but after some further discussion, the Motion was withdrawn.

April 1881. Hansard, 260, p. 764.

13. In 1881, too, a lengthy exposition of the main views of the Society was given by Sir Joseph Pease, though, for the same reason as in the preceding year, no Division on the Amendment could be taken.

It was apparently this discussion which gave rise to the despatch on the subject of opium by the Secretary of State, answered by the Government of India in the following December, as was mentioned above.

October, 1881.

14. In the autumn of the same year a meeting was convened at the Mansion House on the invitation of the Lord Mayor of London, who was one of the leading members of the Anti-Opium Society, at which the following Resolutions were adopted.

"That in the opinion of this meeting:—

(1.) The opium trade as now carried on between India and China is opposed alike to Christian and International morality and to the commercial interests of this country.

(2.) It is the duty of this country not only to put an end to the opium trade as now conducted, but to withdraw all encouragement from the growth of the poppy in India except for strictly medical purposes, and to support the Chinese Government in its efforts to suppress the traffic.

(3.) It will be the duty of this country to give such aid to the Government of India as may be found reasonable, in order to lessen the inconvenience resulting to its finances from the adoption of the policy advocated in the previous resolutions.

(4.) The results of the sale of opium in British Burma are a disgrace to our Government of India, and demand the most thorough and immediate remedy."

It was also resolved that a deputation from the meeting should be appointed to lay the above resolutions before the head of Her Majesty's Government, and press upon him the duty of adopting the policy therein approved. An influentially signed memorial on the lines above laid down was presented to Mr. Gladstone, the purport of which it is worth while to mention here, as it is declaratory of the then views and objects of the Society under whose auspices the meeting in question was held.

J., Q. 479.

15. It is superfluous to refer to the views set forth in the memorial in respect to the Chinese trade, since they were based, as Mr. Alexander has stated, on the anxiety of the Society to secure the ratification of the Chefoo Convention, and dealt, accordingly, with a phase of the question which passed away in 1885. As to Burma, the memorialists gave their grounds for considering as inadequate the measures taken in respect to the sale of opium. Referring to the taxation of opium by the Government of India, they contradicted the statement sometimes made that under the present system of administration the consumption of opium is held in check, and asserted that it was in the power of the Government to put an immediate stop to the cultivation of the poppy within British territory, if not in the Protected States also. They altogether repudiated the suggestion that had been made that the Government might continue to raise revenue from opium whilst ceasing itself to manufacture and deal in the drug, because, so long as the trade was allowed to continue, whether the Government were directly or only indirectly concerned, the Chinese Government would consider themselves debarred by external pressure from taking effective means to put an end to the consumption of opium in that country. For these reasons the memorialists were not prepared to accept any half measures, but demanded the extinction of the trade as a whole, and the prohibition of the cultivation of the poppy, except in so far as its produce was necessary for medicinal use.

Hansard, 277, p. 1633.

16. Sir Joseph Pease in April 1883 moved in the House of Commons:—

"That an address be presented to Her Majesty praying that in all the negotiations between Her Majesty's Government and China, having reference to the duties levied on opium under the Treaty of Tien-tsin, Her Majesty's Government will be pleased to intimate to the Chinese Government that in any revision of that Treaty, or in any other negotiations on the subject of opium, the Government of China would be met as that of an independent State, having full right to arrange its own import duties."

In a House of 192 members, the Motion was opposed by 126, and was therefore lost.

17. On the conclusion, in July 1885, of the Chefoo Convention between England and China, the dissolution of the Society was discussed, but it was decided to continue its

work on a revised basis, which was explained in a "Statement of facts and principles," issued early in 1886. Whilst admitting that the conclusion of the above Convention terminated what it considered to have been a system of coercion, the Society pointed out that the question could not be allowed to rest. In the altered position of affairs it was considered necessary to adopt a different policy in opposing the opium trade. The attack, accordingly, was no longer directed against the British Government for encouraging importation into China, but against the Government patronage and promotion of production and sale at the sources of the trade in India. The Society, it stated, saw an opportunity, of which advantage was to be taken, to remind the Government of China of the responsibility now resting upon it in respect of the adoption and enforcement of measures to stop the spread of the consumption of opium, whilst the British Government was being urged to restrict and ultimately to suppress the exportation of the drug from India. As regards the production and the export sales of opium in the latter country, the Society protested against the direct connexion of the State with both classes of transactions, whilst strenuously opposing the transfer of the trade to private hands. The measure suggested was to discontinue the issue of licences for growing poppy, leaving for further consideration the arrangements for stopping the cultivation of that plant in Protected States and for discontinuing the duty on opium exported from those States after the production had ceased in British territory. It was recognised that the former step would tend to stop the use of opium in British India, a result, which though only mentioned casually and not as one of the main objects in view, would be welcomed, it was stated, by the Society.

January 1886. I, 478. "Friend of China," VIII., p. 161–2. Do. IX., p. 4. Do. do. p. 9.

18. In pursuance of the policy above described, Sir Joseph Pease moved in the House of Commons on May 4th, 1886:—

"That in the opinion of this House, it is expedient that the Indian Government should take measures to terminate gradually its direct connexion with the cultivation of the poppy and the manufacture and trade in opium, and that it should use the power it possesses to prohibit in British India the cultivation of the poppy, except to supply the legitimate demand of opium for medical purposes."

Hansard, 305, p. 278.

The discussion ended in a count out.

19. No further action was taken in Parliament in this matter till May 1889, when, on the Motion being made "That Mr. Speaker do now leave the chair," Mr. Samuel Smith called the attention of the House of Commons to the opium trade between India and China, and moved, in the form usual on such occasions, to substitute the following words:—

Hansard, 335, pp. 1133–1148.

"This House views with deep regret the history of our opium policy towards China, and regards the traffic in that drug as repugnant to the true interests of that country. It calls upon the Government of India to take steps looking to the final extinction of the trade, and urges upon Her Majesty's Government to intimate to the Chinese Government that in the next revision of the Treaty of Tien-tsin full power will be given to extinguish the trade in opium if it thinks fit."

A Division was taken on the question "That the words proposed to be left out "stand part of the question"; the result being that of 253 members voting, 165 were in favour and 88 against. The Motion was therefore lost by a majority of 77.

20. In the beginning of the following year, the first opportunity occurred for the Chinese Government to terminate the arrangements regarding imported opium which had been made in 1885. No step in this direction, however, was taken by them, nor was any indication given of any intention of moving in the matter.* The attention of the Society for the suppression of the trade was therefore transferred to the use of opium in India. It was stated that the Government of India was recouping its loss of opium revenue, due to Chinese home competition, by extending the sale of the drug in India, and in pursuance of resolutions passed at the annual meeting of the Society for the Suppression of the Opium Trade, a memorial was presented to Viscount Cross, then Secretary of State for India, to the effect that the Society had received during the past two years information tending to show that in various parts of India the habit of smoking opium and preparations from it was on the increase, and that houses licensed in some towns by the Government for smoking such drugs on the premises were causes of great demoralization. The memorialists pressed for the imposition in India of restrictions on the sale of opium such as are placed in the United Kingdom, under the Pharmacy Act of 1868, and for the prohibition of all shops for the sale of opium and preparations from it to be consumed on the premises. They also urged the authorities to prohibit the licensing of opium shops in Upper Burma, and to reduce and ultimately extinguish such shops in the lower division of that Province.

July 1890. "Friend of China," XI., pp. 89, 107. Do. do. p. 152. Do. do. p. 292.

* Hansard, Vol. 335, pp. 1152–3, 1158, 1174.

Opium in India, C. 6562 of 1892.

21. The memorial, with the voluminous correspondence and statistical tables to which it gave rise, was presented to Parliament in 1892. In connexion with the present subject it is sufficient to mention that the inquiries made by the Government of India resulted in proving that the consumption of the drug was comparatively small; certain minor changes in the regulations then in force had however been found advisable. The licences for opium-smoking saloons, for instance, were not to be renewed on expiration of the current term. The amount of the various preparations of opium for smoking which it was lawful to sell to unlicensed individuals, or which such individuals are allowed to possess at a time, was closely restricted, and the Government of Bombay was requested to put a stop to a practice introduced into that Province, in order to check smuggling, of requiring licensed vendors to sell yearly a guaranteed minimum quantity of taxed opium. As regards Lower Burma, the Government of India expressed their willingness to put aside considerations of loss of revenue from the measure, and to support the proposal of the Chief Commissioner to prohibit the sale of opium and the possession of it by those of Burman race, provided that the necessity and practicability of so stringent a measure were established, and it was made clear that the remedy would not involve evils as great as those that were found to prevail under the existing system.

Despatch No. 94, 17th December 1891. C. 6562 p. 108.

The Secretary of State for India communicated his approval of these steps and of the policy of the Government of India in checking and limiting the habit amongst the people of consuming licensed opium, as far as is possible without driving them to smuggling, or to the use of more harmful narcotics.

Hansard, 352, p. 285.

22. On the 10th of April 1891, before the reply to the above-mentioned memorial had been received, Sir Joseph Pease, on the motion "That Mr. Speaker do now leave the Chair," moved to leave out from the word "that" to the end of the question in order to add the words :—

"This House is of opinion that the system by which the Indian opium revenue is raised is morally indefensible, and would urge upon the Indian Government that they should cease to grant licences for the cultivation of the poppy and sale of opium in British India, except to supply the legitimate demand for medical purposes, and that they should at the same time take measures to arrest the transit of Malwa opium through British territory."

After considerable discussion, a Division was taken in a House of 290 members upon the question "That the words proposed to be left out stand part of the question," which was lost by a majority of 30. The main question was then proposed, and the late Sir Robert Fowler moved an amendment that at the end of the question the words be added :—

"And, this House, feeling the pressure of taxation on the people of India, will take steps to reimburse the deficiency so caused to the Indian Government."

The Debate on this Amendment not having been concluded by one o'clock in the morning, the House adjourned without a Division.

Hansard, 352, p. 900.

23. Sir Joseph Pease subsequently explained that, apart from the inconvenience of placing his proposition as a substantive Motion before the House at that time of the Session, even if he were so minded, he would not ballot for the opportunity of so doing, because Sir Robert Fowler's amendment involved the question of handing over money to the Indian Government without a vote of the Crown, and would possibly be ruled out of order. The Question, therefore, was never put, and the Speaker explained that the House had passed no definite decision either on the first Amendment as a substantive Question, or upon the Amendment which was moved as an addition to the substantive Question.

Do. pp. 383–4.

24. In March 1892 the Society for the Suppression of the Opium Trade presented a second memorial to the Secretary of State, condemning, in the first place, the opium policy of the Government of India in Burma, and, whilst acknowledging the beneficial tendency of the action taken by that Government since the previous memorial had been presented, urged still further measures to check consumption, pointing out that in the opinion of the Society no sufficient reason had been shown for the difference between the law of India and that of the United Kingdom in respect of the sale of opium.

Vol. I., p. 162. I. Q. 492.

25. A third memorial was presented to the Secretary of State in November of the same year, after the change of Government. This is appended to the first volume of the Commission's Proceedings, as constituting the latest official exposition of the views of the Society. The demand for the stringent restriction of production to the amount required for medicinal use, and for that of the sale to the limits prescribed under the Pharmacy

Act of the United Kingdom, was once more pressed. Instructions to the Government of India were called for to immediately suspend the official sales of opium in Calcutta, the hope was expressed that the system of licensing poppy cultivation in the Punjab would be immediately abolished, and that the measures suggested by Sir A. Mackenzie for controlling the consumption of opium in Burma would be at once brought into operation. The Society also expressed its belief that the people of England would be ready to make up any deficiency which, in the judgment of the responsible Government of the day, might be properly attributed to the withdrawal of the Indian Government from the export trade in opium. At the same time it suggested that in several directions retrenchment should be effected, which would go far towards filling the deficiency in question, whilst it was alleged that the stoppage of the opium exports would probably have the effect of stimulating the export of other produce from India to China, and of steadying exchange by putting an end to the drain of silver from the latter country, besides enabling the Chinese to displace their copper coinage in favour of the more valuable metal.

26. In reply, Lord Kimberley pointed out that, dealing with the question as a practical one, whilst the declaration of Sir J. Fergusson, in the House of Commons in April 1891, made it clear that the British Government would never resort to compulsion to enforce the importation, it was by no means certain that the Government of China were anxious to stop the consumption of opium. Not only was a considerable revenue derived from the drug, but the production of opium in China was reported to have largely increased, and owing to improved methods of preparation, the home-grown article had secured a wider market. Then again, whilst the Government of India had recognised that it was their duty to restrict and regulate the consumption of opium in a manner in which they would not regulate that of a perfectly harmless drug, opinion as to the results of the use of this drug was divided. The strong views of the Society for the Suppression of the Opium Trade were not shared by a very large number of persons, and while the tendency of the policy of the Government of India was towards restriction, they were not prepared to go as far in that direction as the Society no doubt desired. From the financial point of view, those responsible for Indian affairs in England did not see their way to dispense with such a revenue as that derived from opium, nor had the Secretary of State for India the slightest reason to suppose that there would be any disposition on the part of the Treasury to place a heavy burden on the taxpayers of the United Kingdom for the purpose of supplying the deficiency in the resources of India caused by the loss of that revenue. Any proposition to that effect would not be likely to meet with a favourable response. On the subject of the consumption of opium in Burma, authorities seemed to be unanimous that the Burman race was affected by the drug in a manner very different from that in which the Indian population was affected, and, whilst it had been found practicable to restrict the use of the drug to Chinese, Shans, and hill tribes in the Upper division of the Province, it had not then been decided whether the necessary machinery was available in the Lower division to enable the authorities to enforce the same system there, and the inquiries on this point alone delayed the introduction of uniformity in practice throughout. The Secretary of State concluded his reply with a few remarks upon the comparison that might reasonably be drawn between the treatment proposed for opium in India and that adopted in the case of alcoholic drink in the United Kingdom, observing that there are in use in India certain drugs more pernicious in their effects than opium, the consumption of which it was impracticable to stop, and which, if the use of opium were to be effectually prohibited, would probably spread widely through the population.

27. The last Parliamentary discussion of the opium question took place in the House of Commons on the 30th of June, 1893, when Mr. Webb, on the motion for going into Committee of Supply, moved to substitute the following words:— Debates XIV., p. 591.

Having regard to the opinion expressed by the Vote of this House on the 10th of April, 1891, that the system by which the Indian opium revenue is raised is morally indefensible, and which urged the Indian Government to give practical effect to that opinion by ceasing to grant licences, and by taking measures to arrest the transit of Malwa opium through British territory; and recognising that the people of India ought not to be called upon to bear the cost involved in this change of policy, and that oppressive taxation, and the stoppage of expenditure necessary for the welfare and progress of the Indian people must be avoided, this House is of opinion that a Royal Commission should be appointed to inquire both in India and in this country, and to report as to:—

(1.) What retrenchments and reforms can be effected in the civil and military expenditure of India.

(2.) By what means Indian resources can be best developed;
(3.) And what, if any, temporary assistance from the British Exchequer would be required in order to meet any deficit of revenue which would be occasioned by the suppression of the opium traffic.

28. On the suggestion of Mr. Gladstone as Head of the Government, the Motion for going into Supply was negatived without a Division, and the following, which stood in the name of Mr. G. W. Russell, Under Secretary of State for India, was moved by Mr. Gladstone as an Amendment to that above quoted :—

Debates XIV., p. 626.

To leave out from the words "having regard to the" to the end of the proposed Amendment, in order to add the words "strong objections urged on moral grounds to the system by which the "Indian opium revenue is raised, this House presses on the Government of India to continue their "policy of greatly diminishing the cultivation of the poppy and the production and sale of opium, "and desires that an humble address be presented to Her Majesty, praying Her Majesty to appoint "a Royal Commission" [*the remainder of the Amendment has been already quoted in full at the beginning of the Report*].

p. 634.

On the Question being put "That the words proposed to be left out stand part "of the proposed Amendment," a House of 284 members voted, of whom 105 were in favour of the retention, which was lost, therefore, by 179 votes. The main Question as amended was then put and agreed to, resulting in the appointment of this Commission.

Friend of China, XIV. pp. 109 and 146.

This decision, it may be added, was characterised by the Anti-Opium Society as "the greatest and most solid forward step that the movement for the suppression of the "opium trade had yet made," whilst the Commission as constituted was "as fair-"minded and impartial a tribunal as the Society could have desired to hear its case."

This Memorandum may be appropriately closed by quoting statistics bearing on the question of the varying interest taken by the House of Commons in the Opium Debates :—

| Year. | Mover. | Per-centage | |
|---|---|---|---|
| | | Of Members voting on the full House. | Of Supporters of the Resolutions on Members voting. |
| 1870 - - - | Sir Wilfrid Lawson - - - | 29 | 23 |
| 1875 - - - | Sir M. Stewart - - - | 23 | 37 |
| 1883 - - - | Sir J. Pease - - - | 29 | 34 |
| 1886 - - - | Sir J. Pease - - - | — | —* |
| 1889 - - | Mr. S. Smith - - - | 38 | 36 |
| 1891 - - - | Sir J. Pease - - - | 43 | 55 |
| 1893 - - - | Mr. Webb - - - - | 42 | 37† |

* House counted out.
† This per-centage represents the number voting against Mr. Gladstone's Amendment to Mr. Webb's Motion.

29. *Summary.*—The above sketch serves to show that the object aimed at by those interested in the suppression of the trade has, throughout been the stoppage of the introduction of Indian opium into China. In the early days of the movement, the general assumption was that the whole of the opium which entered that country was directly provided by the Government of India, under the Bengal monopoly, and it was against that system, therefore, that the objections were directed. The place occupied by the Malwa system in the trade was gradually realised, and it was considered that the moral aspect of the situation would be somewhat improved if the identification of the State with the operations were to be abrogated, and the Government were to altogether restrict its connexion with the trade to taxing the opium produced by others, whether in British India or Malwa. On the conclusion of the Treaty of Tientsin, in 1858, the movement took the form of protesting against the admission of opium into China, even on payment of a specially high rate of duty. This concession, it was alleged, had only been made by China under pressure and intimidation exercised by Great Britain in virtue of her position, for the time being, of the dominant Power. The conclusion, in 1885, of the revision of the arrangements under the Treaty of 1858, left China entirely master of the situation after the expiration of four years from that date. As the time of potential emancipation from the obligations imposed by the Convention drew nigh, it appeared from the speeches of the leaders of the anti-opium movement in England, introducing the Resolution of 1889, that there were grounds for supposing that the Chinese, for some reason or other, would not avail themselves of the opportunity opened to them. The efforts of the Society for the Suppression of the Trade were

accordingly directed towards the prohibition by the British Government of the production of the drug in India, independently of, and without regard to, the possible inaction of the Court of Peking in the matter. Parliament having declined to support the course of action suggested, and several opportunities for revision having been let pass by the Chinese without the manifestation on their part of any desire to denounce the opium arrangements, the direction of the movement was again changed, and the question was next brought before the House of Commons from the standpoint of the great evil that was being caused by the consumption of the drug, not only in China, but in India itself, a matter which up till then, though sometimes casually referred to in the discussions on the general question, had not become the subject of special reprobation or inquiry. This remark does not apply to Burma, because shortly after the Chief Commissioner of that Province had communicated to the Government of India in 1880 the strong views held by himself and local officials of experience as to the injurious effects of the opium habit on the Burman race, those views were adopted by the Anti-Opium Society in England, and were pressed upon the attention of the Secretary of State for India in the memorial presented to him in 1881. The movement entered its present phase in 1890. Though the consumption in India has ever since been placed in the foreground of the case, the course of the Debates of 1891 and 1893, still more the memorials and other representations on the part of the Society for the Suppression of the Trade indicate that the habit as it is alleged to exist in India and the direct connexion of the Government of that country with the production are regarded mainly in connexion with efforts to secure the discontinuance of the exportation of opium from India to China.

J. A. BAINES,
Secretary to the Commission.

July, 1894.

## MEMORANDUM VI.

## THE GOVERNMENT POLICY IN REGARD TO THE SUPPLY OF BENGAL OPIUM;

By the Secretary.

1. In the discussion of the opium question considerable prominence has been given to the policy of the Government of India in regard to the cultivation of the poppy in the tracts under the monopoly system. The subject is not one of the issues immediately before the Commission, but a short description has been thought advisable of the course of procedure in respect to this branch of agriculture and the considerations on which it has been regulated by the Government during the last 10 years. By adopting this plan it is possible to explain the discrepancy between the statements made in Parliament and before the Commission, respectively, on this matter.

2. The opium year, from the point of view of the producer, begins in September, when the cultivator enters into the engagement with the departmental official as to the area to be placed under poppy. The seed is sown almost immediately afterwards. The crude opium is collected during the winter and spring, so that by the end of May, or shortly before, the amount of the season's outturn is known to the local agents, and most of it has been delivered at the central factories for manufacture. The crop, it must be mentioned, is unusually precarious. Excessive or deficient rain, just at the time of sowing, spoils the whole prospect of the season, and even at the last moment before ripening a most promising field is not unfrequently utterly wasted by hail, frost, insects, or blight. The disposition of the cultivator, therefore, is a factor in the situation of peculiar importance. After a few unlucky seasons he is discouraged, and holds back for a while from undertaking to grow poppy. On the other hand, a couple of years of good returns creates such an anxiety to obtain a license that the refusal of permission is elevated into a grievance of sufficient moment to be carried before the Supreme Government and even higher authority.

II. 2975.

3. This tendency, unfortunately, is apt to run contrary to the policy of the Government in respect to this cultivation. Up to 1875 it was the practice to sell each year the whole, or nearly the whole, of the stock of opium available. Since then the policy has prevailed of selling, as far as possible, the same quantity every year, keeping up a reserve to supplement the deficiency caused by a bad outturn. The market as well as the revenue is thus steadied. The reserve is fixed, as a rule, at one half the amount required for the year's sales, but as the opium is kept a year before issue, the stock of one season fixes the reserve at the end of the calendar year following. A series of good years accordingly, which stimulates the cultivator to extend his operations in poppy, puts the Government beyond the necessity of yielding to his desire, since not only is a larger sum sunk in the advance and payments for the crude drug, but the latter loses in weight, and consequently in value, by remaining more than one season in stock.

4. If, then, we omit the competition of Chinese and Persian opium, and assume that a certain amount of consideration is given to the condition of the Malwa supply, the factors in the case are reduced to three, the amount of opium available for sale from the current season's crop, the state of the reserve, and the area under poppy. The policy above described keeps the first constant. The second bears a fixed proportion to the first, so that the third is left as the only variable. A brief review of the circumstances of the last few years will suffice to show how this policy has been carried out and in what particulars it has been abandoned.

5. The figures given at page 325 of Vol. II. of the Commission's Proceedings indicate that a bad outturn in 1882–83 was followed by a run of good luck almost unprecedented. To save the trouble of reference, the figures for the years in question,

together with those of the sales and reserve stocks from page 346 of the same volume are here reproduced :—

| Opium Year (September to August). | | | | Calendar Year. | | |
|---|---|---|---|---|---|---|
| Year. | Number of Licenses. | Area cultivated. | Outturn of Crude Opium. | Year. | Amount sold. | Reserve. |
| | | Acres. | Cwts. | | Chests.* | Chests.* |
| 1882–3 | 1,288,922 | 495,740 | 52,979 | 1883 | 54,400 | 11,625 |
| 1883–4 | 1,345,915 | 505,843 | 96,801 | 1884 | 46,698 | 2,265 |
| 1884–5 | 1,379,326 | 565,246 | 102,312 | 1885 | 50,994 | 18,274 |
| 1885–6 | 1,483,863 | 594,921 | 92,903 | 1886 | 54,750 | 29,205 |
| 1886–7 | 1,448,508 | 562,052 | 82,258 | 1887 | 57,000 | 36,705 |
| 1887–8 | 1,408,519 | 536,607 | 94,082 | 1888 | 57,000 | 37,205 |
| 1888–9 | 1,195,767 | 459,864 | 51,792 | 1889 | 57,000 | 49,705 |
| 1889–90 | 1,274,587 | 482,557 | 73,305 | 1890 | 57,000 | 31,010 |
| 1890–1 | 1,306,741 | 501,719 | 63,540 | 1891 | 56,250 | 18,770 |
| 1891–2 | 1,241,211 | 463,664 | 53,849 | 1892 | 48,852 | 9,292 |
| 1892–3 | 1,195,871 | 454,156 | 63,702 | 1893 | 43,704 | 104† |

* Of about 140 lbs. each. † Approximately.

6. The success of 1883–4 resulted in a large increase of cultivation in the succeeding year, when the Benares agent reported that disappointment had been caused amongst the cultivators owing to his inability to comply in full with all applications for extension of area to be licensed. In 1885–6 the same good fortune was experienced, causing still more pressing demands for extension. It is stated, however, both in the report and in the Government review of it, that in consequence of the stock in hand from the previous good seasons, the Lieutenant-Governor had directed that the area should not be increased. Departmental Reports.

7. Orders to the same effect were issued as regards the operations in the Benares agency for the season of 1886–7, when it was considered that the existing area might be maintained, as the reserve had not reached the limit at which cultivation might safely be reduced. In the season of 1886 7, the Benares agency showed a smaller outturn owing to the loss of the early sowing. But the popularity of the cultivation enabled the departmental officials to exercise their discretion in selecting men and localities, so that by process of weeding, the operations were concentrated in the most profitable tracts and amongst the best agriculturists. Bengal letter No. 925 T.R, dated 5th July 1886.

8. The next year, 1887 8, was remarkable for the success in fulfilling the object of Government, namely, to obtain an increased outturn from a curtailed area. In reviewing the work of the year, the Lieutenant-Governor remarked :—

"The department is to be congratulated on its success in extending the system to which special attention was drawn in last year's resolution, of limiting the area of cultivation and affecting settlements to the greatest advantage by insisting on the judicious selection of the best and most conveniently situated lands, as well as of experienced and successful cultivators only. The extension of cultivation was formerly the object of Government, but a departure was made in the year 1885 6 in consequence of the large stock of opium in hand at the commencement of that season, and orders were then passed with a view to prevent any further increase in production. The change of policy thus initiated has recently been given a still more pronounced turn by the issue of instructions directing a specific reduction of cultivation, a step necessitated by the further accumulation of an excessive reserve both at Calcutta and in the factories. . . . . Unremunerative tracts were abandoned, advances refused to unsatisfactory cultivators and bad villages, inferior cultivation in the neighbourhood of large towns closed, and by these means the . . . . . area was reduced to 427,569 bighas."

9. The instructions mentioned in the above passage are probably those contained in one of the letters from the Government of India to which reference was made before the Commission by the present Secretary in the Financial Department. In their letter No. 4035 of the 23rd July 1888, that Government informed the Government of Bengal that they accepted the proposal that the area under poppy should be reduced to an extent sufficient to provide for an out turn of only 30,000 chests of opium, instead of 57,000. They requested, however, that in giving effect to this policy the following principles should be borne in mind : first, that it was undesirable that any risk should be run of having, for want of stock, to reduce the sales materially below 57,000 chests ; and secondly, that in the event of the stock being depleted by a bad year of production, it should not be out of the power of the Government to expand cultivation. The normal quantity of opium to be annually sold under the above policy was fixed at 57,000 chests, with a reserve of 30,000. H. 5160.

10. The area licensed in 1888–89 was materially reduced in accordance with these instructions. In the Behar Agency the reductions were effected merely by the process

of weeding out the less profitable cultivators and by the elimination, as far as possible, of the men who engaged for poor land with the object of securing the advance without sowing more than a fraction of the land specified in the agreement. In the Benares agency the reductions were far more extensive. In the outlying districts to the west, where supervision was difficult and the outturn comparatively small, the cultivation was altogether stopped, and licenses were refused freely in other parts of the agency where the cultivation was not satisfactory. The operations were thus restricted to the best tracts, yielding the most profitable results. On the whole, the reduction amounted to nearly 20 per cent. of the area sown in the preceding year. This, however, was somewhat below the extent prescribed by the Local Government; but the main object in view, namely, the prevention of a still greater accumulation of stock, was attained, since the outturn of the season was very short, rendering unnecessary the continuance of the policy of reduction.

11. The final results of the year's operations were, in fact, so much below the average, that for the next season, 1889–90, the Government of India, in their letter No. 4093 of the 8th August 1889, sanctioned such an extension of area as would, in an average season, provide the equivalent of 57,000 chests. As it turned out, the Behar cultivator, disheartened by the failure of the preceding season, applied for a somewhat less area than before. In Benares the increase was in nearly the same proportion as the decrease in the area of 1888–9 as compared with that in 1887–8 The outturn, however, was again unsatisfactory in both agencies, though worse in Behar than further west.

12. It was considered that with an average season the outturn in the Benares agency would be enough to obviate the need of material extension of area, so for the ensuing year, 1890–1, special extension was sanctioned by the Government of Bengal in Behar only. At the same time, a discretionary power was given to the Benares agent to accept applications for what might be considered the normal expansion of poppy cultivation in the tracts already specified as those best suited to this crop, in order that the cultivation might gradually resume its former limits and bring the reserve up to the prescribed amount. Hail and untimely rain, however, brought the outturn still lower than in the preceding season, so that the question arose whether the amount offered for sale should be reduced or the area licensed be extended.

Bengal letter 205, T.R., of 14th June 1890.
Bengal Resolution 1870, of 23rd March 1891.

13. The former alternative was adopted by the Government of India in their letter to the Government of Bengal, No. 2953 of the 13th July 1891, on the grounds that—

"it is not considered safe to assume that the average annual production will be sufficient to provide more than 54,000 chests for sale annually, without taking measures for the extension of cultivation which are not deemed expedient."

It was pointed out, however, as in the preceding year, that there was no objection to allowing the normal expansion to continue, as the cultivator should be left free to decide for himself whether it is or is not profitable for him to cultivate the poppy on his land in preference to other crops, and where his interests harmonize with those of the Government, no impediment need be placed on his liberty of action.

14. The results of the season of 1891–92 were the worst on the 20 years' record. The sudden contraction of the area at a time when the cultivators, at all events in the Benares agency, were most in favour of poppy, together with the failure of the crop four times in succession, disheartened those who were formerly eager to obtain licenses, and the rumour that the Government was likely to prohibit the cultivation altogether, which was current in parts of Behar, helped to keep back applications. The Government of India was obliged to curtail its sales during the last quarter of 1892, and to notify for the following year a lower number of chests than had been sold since 1874, exhausting, even with this reduction, the whole reserve.

Bengal Resolution 940, of 8th March 1892.

15. In order to re-establish the operations on their former basis, the Local Government proposed to license cultivation in 1892–93 up to the previous limit. On this the Government of India sanctioned any increase directly applied for by cultivators, on the understanding that there should be no permanent excess over the average of past years. In Behar the increase was but slight, whilst in the Benares agency the downward course was not stayed. In both, however, the outturn was somewhat better than in 1891–92.

Letter 2802A of 6th July 1892.

16. It is clear, from the above account of what has taken place during the last ten years, that the object at which the Government of India have consistently aimed is the sale of as nearly as possible the same quantity of opium every year. For several

years in succession the season was so favourable that the stock of opium considerably exceeded the requirements for the above purpose. The attention of the departmental officers was accordingly directed towards the restriction of the supply, a result that could be best obtained by the contraction of the area licensed for the growth of the poppy. The glut was followed, however, by a still longer period of depression, during the first years of which it was the object of the Government to maintain the area at its existing figure in the hope of a full outturn, or else to increase it up to its previous extent, so that, in case of continued bad luck, the requisite outturn could be obtained from a wider surface.

17. This system of regulating the supply placed on the market came however to an end, as has been shown in paragraph 13, at the opening of the season of 1891–92. In spite of the depletion of the reserve and the proposals of the Local Government to adopt the steps that had been customary in previous years, the Government of India then determined to adapt their sales to the changed conditions, and to abandon the attempt to replenish their stock by extending the area licensed for poppy. The reserve was drawn upon to its utmost capacity, so that for the supply in the immediate future the Government were at the mercy of the season.

18. The explanation of this change of system has been given before the Commission by Sir David Barbour, who stated that the fluctuations in area were not due to any definite policy, adding— II. 2,098.

"But it is a fact that in very recent years we have rather avoided any appearance of increase, because we were liable to be attacked on account of the increase. We were liable to have it said of us that more opium was being grown, and that we were stimulating production and consumption, and therefore during the last few years we have rather avoided any increase of the cultivation."

19. On referring to the historical review of the Anti-Opium Movement given in the preceding Note, it will be seen that since 1886 the agitation against the opium trade had been diverted from the consumption of the drug in China to its production in India. The questions raised in the memorial presented to the Secretary of State for India in 1890 were under the consideration of the Government of India when the truncated discussion of April 1891 took place in the House of Commons, three months before the Government of India communicated to the Government of Bengal its view that an extension of cultivation was not expedient. It appears, therefore, that up to the latter date the policy of the Government was to contract the poppy area only when the stock of opium in hand was large, and to extend it when that reserve was getting low. Since July 1891, so far from reducing the area thus licensed, the Government has directed its efforts towards maintaining it, with the intention of increasing it up to the average of past years, though not permanently beyond that limit. It is this last policy that finds expression in the information given by Sir David Barbour, as above cited.

20. But the action of the Government, both up to and after 1891, has been differently interpreted in the House of Commons, where it has been taken to signify a policy of gradual extinction of the system of direct production of opium. In the Debate of the 10th of April 1891, for instance, Sir James Fergusson said:— Hansard, 352, p. 323.

"I freely admit that the Government of India have never denied that it would be very desirable that this source of revenue should be altered. They have taken means to reduce it. They have diminished the number of licenses, and they diminished the area on which the poppy is grown. One million acres less are now under poppy in Bengal than 10 years ago." *

Mr. W. H. Smith said on the same occasion:— Hansard, 352, p. 343.

"The course which this Government has taken, and which all Governments have taken during the last few years, . . . . has been to diminish the area of cultivation in India to an extent, in the last five years at any rate, of 20 per cent. The production and sale of opium has been decreased considerably in each year, and that must be taken as an indication of the policy of the Government."

21. These statements carried some weight, for amongst other reasons given by the Mover of the proposition under discussion for not balloting for an opportunity of bringing the Motion regarding the opium trade again before the House, Sir J. Pease expressed himself quite content, for the time being, with the declaration made by the First Lord of the Treasury, that the policy of Her Majesty's Government had been in the past a steady reduction of the quantity of land in India placed under poppy cultivation, and that this policy would be persevered with in the future. Hansard, 352, p. 901.

22. This announcement was made on the 20th of April. On the 23rd of that month a correction was given by Sir John Gorst, Under Secretary of State for India, who had

* Or, more correctly, 100,000 acres less than five years ago.

been absent when the subject was first brought forward. The following question was asked by Mr. J. M. Maclean, then Member for Oldham :--

Hansard 352, p. 1152.

"Whether the India Office has any evidence to show that the recent reduction in the area of poppy cultivation in Bengal is due to the intention of the Government of India to do away with the opium revenue little by little, and not to the commercial necessity for reducing production in order to keep up the price in face of the increasing competition of opium grown in China; and whether the policy of the Government of India with regard to this source of revenue is correctly expressed by Sir David Barbour, the Indian Finance Minister, who, in introducing his Budget for the year 1891–92, said :—

"'The opium revenue has, no doubt, fallen largely, and at this moment there are no indications of a recovery. On the other hand, the fall up to date has been discounted, and provision made to meet the consequent loss of revenue. As the fall has been so great, we may fairly hope that, for the present, we have seen the worst."

In answer, Sir J. Gorst said :—

"The reason given for the reduction of the area of poppy cultivation in Bengal is that the reserve stock of opium had become unduly large. The statements of Sir David Barbour, no doubt, do express correctly the policy of the Government of India."

23. It may be noted that whilst Sir James Fergusson had ascribed the policy he set forth to the Government of India only, Mr. W. H. Smith, then the Leader of the House, used words identifying with it Her Majesty's Government. It was, perhaps, for this reason that the explanation of Sir John Gorst passed unheeded. For example, in the Debate on the Address in February 1892, Sir J. Pease observed that the late Leader took credit for Her Majesty's Government that they had during the last five years decreased the area under poppy. The same Member reverted to this declaration of policy in the course of the discussion of June 1893, pointing out that it had been strengthened by the announcement made in February 1892, by Mr. Curzon, then Under Secretary of State for India, to the effect that in order to restrict the area of cultivation, the Government of India reduced the number of chests to be sold that year by 3,000. Finally, the first substantial portion of the Resolution of the House of Commons in consequence of which the present inquiry has taken place "presses on the "Government of India to continue their policy of greatly diminishing the cultivation "of the poppy."

Debates I., p. 139.
Debates XIV., p. 604.
Debates I., p. 1207.
Debates XIV., p. 634.

24. The fact has been sufficiently insisted on above that, down to the year 1891, the policy of the Government was not one of reduction, but of regulation, according to the demands of the market and the revenue. Since that date, again, the tendency (for the policy may be said to be in abeyance) has been to reduce the sales, not with the object of restricting cultivation, as Mr. Curzon expressed it, but of obviating the necessity for allowing it to resume its former extent. Having regard to the importance that has been given to this misapprehension in the discussion which ended in the appointment of this Commission, it is hardly enough to merely call attention to it, but it is advisable to also account for its origin on the part of those responsible for the statements which first gave it currency. It appears most probable that the misunderstanding is based on certain passages in the Moral and Material Progress Report published annually by the Secretary of State for India, which may therefore be quoted in elucidation of this question.

25. The Reports for the years to which reference is necessary contain a summary as well as a more detailed sketch of the year's operations. In that for 1886–87, presented in August 1888, the summary merely quotes the area under poppy for the last and penultimate years respectively. In the body of the work it is stated that :—

1886–87, (319) pp. 8 & 70.

"With a considerable stock of opium in hand at the beginning of the year, there was no necessity for increasing the area under cultivation in Bengal, and the agents were accordingly instructed to refrain from doing so."

26. In the Report for 1887–88, presented in August 1889, the summary contains the following words :—

1887–88, (327) pp. 8 & 72.

"The area of opium cultivation in Bengal was 536,610 acres; steps are being taken to reduce the area, because the good opium harvests of the past few years have yielded more than was required to supply the monthly sales and keep up the reserve."

In the body of the Report it is stated that :—

"The instructions issued in 1885–86 to reduce the area of cultivation and to confine it as far as possible to the best lands and the most experienced cultivators are still in force, in consequence of the large accumulation of manufactured opium at Calcutta and in the factories."

It will be noticed that the acreage mentioned is not identical with that entered in the return presented to the Commission. The policy is set forth in almost the same words in both passages.

In the Report for 1888–89, presented in August 1890, the areas again differs from the Indian return. As to the policy, the statement in the summary is:— 1888–89, (384) pp. 8 & 71.

"Steps have now been taken for two years to reduce the area, because the good opium harvests of the past few years have yielded more than was required to supply the monthly sales and keep up the reserve."

In the Report itself, however, the statement runs:—

"In pursuance of the policy of reducing the opium area, the land actually cultivated with opium in the Ganges Valley was reduced to 518,930 acres, or 3 per cent. below the area of 1887–88, and 7½ per cent. below the opium area of 1886–87. The contraction of the opium area caused some dissatisfaction among the ryots, among whom the opium cultivation, with its accompanying cash advances at a critical season of the year, is popular."

The reason for the reduction is here omitted.

28. In the Report for 1889–90, presented in May 1891, only the area for the preceding year is quoted. In the summary occur the words:— 1889–90, (250) pp. 9 & 86.

"Steps have now for four years been taken to reduce the area, because the good opium harvests of the past few years had yielded more than was required to supply the monthly sales and keep up the reserve."

In the body of the Report the sentence, except for the figures, is that of the preceding year:—

"In pursuance of the policy of reducing the opium area, the land actually cultivated with opium in the Ganges Valley was further reduced to 459,860 acres, as compared with 518,930 acres in the previous year, and 556,527 acres in 1885."

It was apparently on these figures that the statements in the House of Commons were based.

29. In the Report for 1890–91, presented in May 1892, the summary merely mentions the area, which nearly corresponds with that in the opium departmental tables for that year. In the body of the Report the following remarks occur:— 1890–91, (220) pp. 9 & 89.

"In pursuance of the policy of reducing the opium area, the land actually cultivated with the poppy in the Ganges Valley had been reduced in 1888–89 to 459,860 acres, as compared with 556,527 in 1885. The yield of opium had been very short in 1888–89, and the total quantity manufactured was 38,305 chests, as compared with 69,500 chests in 1887–88. *Some extension of the cultivation then occurred*, and the area rose in 1889–90 to 482,560 acres. In 1889–90 the opium crop was again short, especially in Behar; . . . . and the total quantity manufactured was 44,760 chests. In 1890–91 *the poppy area increased* to 500,683 acres; but the yield was again short, and the outturn of opium was 44,522 chests. . . . . It is reported that cultivators of opium have lost heart, after experiencing three bad opium seasons in succession. . . . . In 1891 the Government of India decided not to arrange for any extension of the opium area, and to reduce the quantity of opium advertised for sale during 1892 to 54,000 chests, as against 57,000, the number that had been sold annually for several years past."

30. On the above quotations it may be remarked that after the Report for 1887–88 there is no mention of the reason for the reduction of area in that portion of the work to which a reader would naturally turn for information. Nor, again, in the Report for 1890–91, is the connexion shown between the extension that took place in 1889–90 and the policy of the Government with regard to it. Finally, in respect to the orders of the Government of India in 1891, the statement in the Report is incomplete without mention of the acquiescence of that Government in any increase that might arise from what has been called above the "normal" expansion of the cultivation of the poppy.

31. It must be borne in mind that Mr. W. H. Smith had no personal or immediate official connexion with Indian administrative detail, and Sir James Fergusson was only called upon to address himself to this branch of the opium question by reason of the temporary absence of the Under Secretary of State for India. It is highly probable, therefore, that they both referred for their information to the official reports presented to Parliament, in which the elasticity of the policy of the Government of India is nowhere distinctly set forth. An early opportunity was taken by the responsible Minister, on his return, to place the matter before the House in its true light, but a statement made in answer to a question by a private Member may fairly be assumed to be less widely known and to carry less weight than a declaration made in formal debate.

32. The only evidence that appears to give colour to the notion that the Government of India has abandoned its former policy consists of the two statements that have been already quoted in the course of this Note; first, that any more than normal expansion was inexpedient, and, again, a year afterwards, that the average area of past years was to constitute the limit of further permanent increase. Both these declarations were made after the discussion of April 1891, and, as Sir David Barbour has assured the Commission, out of deference to what then took place in the House of Commons.

J. A. BAINES,
Secretary to the Commission.

September 1894.

## MEMORANDUM VIII.

## TABLES SHOWING THE DISTRIBUTION, BY DISTRICTS, OF THE OPIUM HABIT IN BRITISH INDIA;

PREPARED BY THE SECRETARY.

In the Second Section of the Report the average annual consumption of licit opium per head, is shown by Provinces or large divisions of Provinces. In the tables accompanying the Excise Memoranda included in Vols. II., IV., and V., of the Proceedings of the Commission, corresponding figures are given by administrative districts. The averages are not, however, calculated in uniform weights, so that comparison is impracticable without further computation. It has been found, also, that in several instances the figures have been incorrectly printed, and in the case of Bengal that some of the calculations are wrong.

It has been thought advisable, therefore, to reduce the whole of the tables on a uniform basis in a form which will render them available for detailed comparison as well as for the exhibition, if necessary, of the facts they represent in the more useful and popular shape of a shaded or coloured map.

There is a slight difference between the census returns and the figures of area and population now presented. In the first place, it has not been considered worth while to include figures for the small Province of Coorg or the British territory in Balochistan. The consumption of opium in the former is very limited; and in the case of the latter the population over which the consumption is distributable is not on record. Ajmer-Merwara, again, has been excluded, as no complete statistics are there collected. In the Punjab, about 6,000 Baloch wanderers, encamped at the time of census in the Dera Ghazi Khan district, have been excluded from the settled population.

The first table gives the total population of each district, grouped by Provinces, with the average yearly consumption of licit opium per head. In the second table, the districts are brought together according to their average consumption, the provincial order falling into a subordinate place. The third table is merely a proportional reduction of the second; showing, first, the general geographical distribution of each degree of prevalence, and, second, the variety of prevalence found within the individual Province:—

TABLE I.

| District. | Population (1891). | Average yearly consumption of Licit Opium per Head, 1892–93. |
|---|---|---|
| | | Grains. |
| I. ASSAM - - | 5,433,199* | 141·4 |
| 1. Sylhet - - | 2,154,593 | 6·5 |
| 2. Kachar - - | 367,542 | 41·8 |
| 3. Goalpara - - | 452,304 | 16·9 |
| 4. North Kachar - | 18,941 | 170·3 |
| 5. Naga Hills - | 122,867 | 60·5 |
| 6. Khasia „ - | 197,904 | 19·8 |
| 7. Garo „ - | 121,570 | 5·6 |
| 8. Kamrup - - | 634,249 | 136·6 |
| 9. Darrang - - | 307,761 | 374·9 |
| 10. Nowgong - | 344,141 | 353·7 |
| 11. Sibsagar - - | 457,274 | 442·2 |
| 12. Lakhimpur - | 254,053 | 747·4 |
| II. BENGAL - - | 71,069,643* | 15·0 |
| 1. Darjiling - | 223,314 | 15·7 |
| 2. Jalpaigori - | 681,352 | 6·0 |
| 3. Purneah - - | 1,944,658 | 13·8 |
| 4. Maldah - - | 814,919 | 33·9 |
| 5. Rajshahye - | 1,313,336 | 13·3 |
| 6. Dinajpur - | 1,555,835 | 14·4 |
| 7. Rangpur - - | 2,065,464 | 20·6 |
| 8. Pabna - - | 1,362,392 | 6·6 |
| 9. Bogra - - | 817,494 | 11·9 |
| 10. Bardwan - - | 1,391,880 | 22·8 |
| 11. Bankura - - | 1,069,668 | 8·2 |
| 12. Birbhum - | 797,833 | 15·9 |
| 13. Santhal Pargannahs | 1,754,196 | 3·3 |
| 14. Hughli - - | 1,076,710 | 41·4 |
| 15. Nadia - - | 1,644,108 | 10·9 |
| 16. Murshidabad - | 1,250,946 | 23·5 |
| 17. Midnapur - | 2,631,516 | 25·0 |
| 18. Howrah (*rural*) - | 587,905 | 30·5 |
| 19. The 24-Pargannahs | 1,832,449 | 32·7 |
| 20. Calcutta & suburbs | 874,150 | 276·1 |
| 21. Khulna - - | 1,177,652 | 10·1 |
| 22. Jessore - - | 1,888,827 | 7·3 |
| 23. Bakarganj - | 2,153,965 | 7·7 |
| 24. Faridpur - | 1,797,320 | 2·2 |
| 25. Noakhali - | 1,009,693 | 1·1 |
| 26. Tipperah - - | 1,782,935 | 0·8 |
| 27. Dacca - - | 2,120,656 | 5·1 |

* Omitting the hill tracts in North Lushai, Chittagong, and Angul.

| District. | Population (1891). | Average yearly consumption of Licit Opium per Head, 1892–93. |
|---|---|---|
| | | Grains. |
| 28. Maimansingh - | 3,472,186 | 5·8 |
| 29. Chittagong† - | 1,290,167 | 31·8 |
| 30. Cuttack† - | 1,937,671 | 37·5 |
| 31. Puri - | 944,998 | 27·5 |
| 32. Balasore - - | 994,625 | 86·3 |
| 33. Hazaribagh§ - | 1,164,321 | 3·7 |
| 34. Lohardaga - | 1,128,885 | 9·2 |
| 35. Palamau - | 596,770 | 3·0 |
| 36. Singhbhum - | 545,488 | 11·3 |
| 37. Manbhum | 1,193,328 | 4·8 |
| 38. Champaran* - | 1,859,465 | 0·8 |
| 39. Saran* - - | 2,467,477 | 0·9 |
| 40. Muzaffarpur‡ - | 2,711,445 | 2·6 |
| 41. Darbhanga‡ - | 2,801,955 | 3·0 |
| 42. Patna* - - | 1,769,004 | 14·8 |
| 43. Gaya* - - | 2,138,331 | 5·2 |
| 44. Shahabad* - | 2,063,337 | 2·0 |
| 45. Monghyr‡ - | 2,036,021 | 2·4 |
| 46. Bhagalpur - | 2,032,696 | 6·2 |
| BERAR - - | 2,897,491 | 91·0 |
| 1. Buldana - - | 481,021 | 90·6 |
| 2. Basim - - | 398,181 | 34·7 |
| 3. Wun - - | 471,613 | 48·5 |
| 4. Akola - - | 574,782 | 127·3 |
| 5. Amraoti - - | 655,645 | 95·7 |
| 6. Elichpur - - | 315,798 | 154·4 |
| BOMBAY - - | 15,985,270 | 47·0 |
| 1. Ahmedabad - | 921,712 | 114·7 |
| 2. Kaira - - | 871,589 | 81·2 |
| 3. Panch Mahals - | 313,417 | 74·6 |
| 4. Broach - - | 341,490 | 179·6 |
| 5. Surat - - | 649,989 | 33·4 |
| 6. Thana - - | 904,868 | 8·2 |
| 7. Kolaba - - | 509,584 | 10·0 |
| 8. Bombay Island - | 821,764 | 155·2 |
| 9. Ratnagiri - | 1,105,926 | 1·7 |
| 10. Kanara - - | 446,351 | 2·1 |
| 11. Khandesh - | 1,460,851 | 62·6 |
| 12. Nasik - - | 843,582 | 44·1 |
| 13. Ahmednagar - | 888,755 | 73·9 |
| 14. Poona - - - | 1,067,800 | 58·9 |
| 15. Sholapur - - | 750,689 | 60·3 |
| 16. Satara - - | 1,225,989 | 18·4 |
| 17. Belgaum - | 1,013,261 | 3·9 |
| 18. Dharwar - | 1,051,314 | 3·9 |
| 19. Bijapur - - | 796,339 | 4·3 |
| SINDH - - | 2,871,774 | 44·0 |
| Karachi - - | 564,880 | 54·8 |
| Hydrabad and Thar. | 1,216,849 | 57·9 |
| Shikarpur and Jacobabad. | 1,090,045 | 22·7 |
| CENTRAL PROVINCES - | 10,046,546 | 34·0 |
| 1. Nagpur - - | 757,862 | 55·7 |
| 2. Bhandara - | 742,850 | 32·0 |
| 3. Wardha - - | 400,854 | 71·1 |
| 4. Chanda - - | 697,610 | 19·0 |
| 5. Raipur - - | 1,255,698 | 40·3 |
| 6. Bilaspur - - | 827,433 | 32·9 |
| 7. Sambalpur - | 796,413 | 28·5 |

† Omitting the hill tracts in Chittagong and Angul.
* Extensive poppy cultivation.
Considerable poppy cultivation.
Small poppy cultivation.

| District. | Population (1891). | Average yearly consumption of Licit Opium per Head, 1892–93. |
|---|---|---|
| | | Grains. |
| 8. Nimar - - | 253,486 | 42·2 |
| 9. Hoshangab - | 527,702 | 36·9 |
| 10. Narsinghpur - | 367,026 | 35·2 |
| 11. Jabalpur - - | 748,146 | 27·4 |
| 12. Saugor - - | 591,743 | 19·7 |
| 13. Damoh - - | 325,613 | 12·0 |
| 14. Balaghat - - | 383,331 | 68·2 |
| 15. Mandla - - | 339,373 | 29·3 |
| 16. Chindwara - | 339,443 | 41·7 |
| 17. Seoni - - | 370,767 | 56·8 |
| 18. Betul - - | 323,196 | 27·8 |
| MADRAS - - | 35,630,440 | 14·0 |
| 1. Ganjam - - | 1,896,803 | 12·8 |
| 2. Vizagapatam - | 2,802,992 | 40·7 |
| 3. Godavari - - | 2,078,782 | 130·6 |
| 4. Kistna - - | 1,855,582 | 18·6 |
| 5. Nellore - - | 1,463,736 | 1·9 |
| 6. Karnul - - | 817,811 | 6·9 |
| 7. Cuddapah - | 1,272,072 | 3·5 |
| 8. Anantapur - | 708,549 | 1·9 |
| 9. Bellary - - | 900,126 | 3·6 |
| 10. North Arcot - | 2,180,487 | 3·5 |
| 11. Chenglepat - | 1,136,928 | 1·0 |
| 12. Madras City - | 452,518 | 26·5 |
| 13. South Arcot - | 2,162,851 | 0·8 |
| 14. Tanjore - - | 2,228,114 | 1·8 |
| 15. Trichinopoly - | 1,372,717 | 2·3 |
| 16. Madura - - | 2,608,404 | 1·5 |
| 17. Tinnevelly - | 1,916,095 | 0·6 |
| 18. Salem - - | 1,962,591 | 2·3 |
| 19. Coimbatore - | 2,004,839 | 2·7 |
| 20. South Kanara - | 1,056,081 | 1·0 |
| 21. Malabar - - | 2,652,565 | 5·4 |
| 22. Nilgiris - - | 99,797 | 27·1 |
| NORTH-WEST PROVINCES AND OUDH | 46,905,085 | 18·0 |
| 1. Dehra Dun - | 168,135 | 65·4 |
| 2. Tarai (*Naini Tal*) | 210,568 | 38·0 |
| 3. Pilibhit - - | 485,366 | 20·7 |
| 4. Gorakhpur* - | 2,994,057 | 6·6 |
| 5. Basti* - - | 1,785,844 | 3·1 |
| 6. *Gonda** - | 1,459,229 | 4·4 |
| 7. *Bahraich** - | 1,000,432 | 8·0 |
| 8. Almora (*Kumaun*) | 563,181 | 4·6 |
| 9. Garhwal - - | 407,818 | 3·4 |
| 10. Saharanpur - | 1,001,280 | 32·2 |
| 11. Muzaffarnagar - | 772,874 | 29·2 |
| 12. Meerut - - | 1,391,458 | 36·6 |
| 13. Aligarh - - | 1,043,172 | 39·6 |
| 14. Bulandshahr - | 949,914 | 31·4 |
| 15. Agra - - | 1,003,796 | 39·5 |
| 16. Mathura - - | 713,421 | 29·9 |
| 17. Etawah‡ - - | 727,629 | 21·8 |
| 18. Cawnpore‡ - | 1,209,695 | 69·1 |
| 19. Farakhabad‡ - | 858,687 | 12·7 |
| 20. Etah‡ - - | 702,063 | 23·4 |
| 21. Mainpuri‡ - | 762,163 | 7·7 |
| 22. Allahabad‡ - | 1,548,737 | 36·5 |
| 23. Fatehpur§ - | 699,157 | 30·7 |
| 24. Jalaun - - | 396,361 | 44·1 |
| 25. Jhansi - - | 683,619 | 34·3 |
| 26. Banda - - | 705,832 | 19·9 |
| 27. Hamirpur - | 513,720 | 42·7 |

* Extensive poppy cultivation.
‡ Considerable poppy cultivation
§ Small poppy cultivation.
N.B.—Oudh districts are given in italics.

| District. | Population (1891). | Average yearly consumption of Licit Opium per Head, 1892–93. |
|---|---|---|
| | | Grains. |
| 28. Mirzapur - | 1,161,508 | 22·9 |
| 29. Benares§ - - | 921,943 | 87·7 |
| 30. Bareli‡ - - | 1,040,691 | 22·1 |
| 31. Budaun‡ - - | 925,598 | 7·3 |
| 32. Shahjahanpar‡ - | 918,551 | 19·2 |
| 33. Moradabad - | 1,179,398 | 33·3 |
| 34. Bijnor - - | 794,070 | 21·8 |
| 35. *Sitapur*‡ - | 1,075,413 | 10·7 |
| 36. *Kheri*‡ - - | 903,615 | 18·5 |
| 37. *Hardoi*‡ - - | 1,113,211 | 7·3 |
| 38. *Lucknow*‡ - | 774,163 | 106·8 |
| 39. *Bara-Banki*‡ - | 1,130,906 | 5·4 |
| 40. *Unao*‡ - - | 953,636 | 15·2 |
| 41. *Faizabad** - | 1,216,959 | 13·1 |
| 42. Ghazipur‡ - | 1,077,909 | 8·1 |
| 43. Balia‡ - - | 942,465 | 1·6 |
| 44. Jaunpur - - | 1,264,949 | 17·7 |
| 45. Azamgarh* - | 1,728,625 | 4·6 |
| 46. *Pratapgarh** - | 910,895 | 6·0 |
| 47. *Rai Bareli** - | 1,036,521 | 8·5 |
| 48. *Sultanpur** - | 1,075,851 | 6·3 |
| PANJAB§ - - | 20,860,913† | 42·0 |
| 1. Simla§ - - | 44,642 | 136·8 |
| 2. Kangra§ - - | 763,030 | 9·9 |
| 3. Ambala* - | 1,033,427 | 74·8 |
| 4. Ludhiana - | 648,722 | 176·8 |
| 5. Amritsar - - | 992,697 | 81·2 |
| 6. Lahore - - | 1,075,379 | 75·5 |
| 7. Jalandhar - | 907,583 | 59·5 |
| 8. Ferozpur - - | 886,676 | 144·5 |
| 9. Gurdaspur - | 943,922 | 44·5 |
| 10. Sialkot§ - - | 1,119,847 | 21·5 |
| 11. Gujrat§ - - | 760,875 | 6·3 |
| 12. Hoshiarpur - | 1,011,659 | 33·4 |
| 13. Gujranwala - | 690,169 | 29·7 |
| 14. Jhilam - - | 609,056 | 16·3 |
| 15. Rawal Pindi - | 887,194 | 24·4 |
| 16. Hazara§ - - | 516,288 | 12·2 |
| 17. Peshawar - | 703,768 | 19·6 |
| 18. Kohat - - | 203,175 | 18·4 |
| 19. Bannu - - | 372,276 | 6·8 |
| 20. Dera Ismail Khan | 486,201 | 9·1 |
| 21. Dera Ghazi Khan§ | 404,031† | 16·3 |
| 22. Muzaffargarh - | 381,095 | 14·5 |
| 23. Multan - - | 631,434 | 17·3 |
| 24. Jhang - - | 436,841 | 6·3 |
| 25. Montgomery - | 499,521 | 23·7 |
| 26. Shahpur‡ - | 493,588 | 8·2 |
| 27. Delhi - - | 638,689 | 35·8 |
| 28. Gurgaon - - | 668,929 | 9·2 |
| 29. Karnal - - | 683,718 | 41·2 |
| 30. Hissar - - | 776,006 | 20·1 |
| 31. Rohtak - - | 590,475 | 14·7 |

N.B.—Oudh districts are given in italics.
* Extensive poppy cultivation.
† Excluding 5,934 Baloch.
‡ Considerable poppy cultivation.
§ Small poppy cultivation.

‡ Considerable poppy cultivation (for opium).
§ Small poppy cultivation (for opium).
† Excluding 5,934 Baloch.

## TABLE II.

SHOWING the DISTRICTS of BRITISH PROVINCES arranged according to their AVERAGE ANNUAL CONSUMPTION of LICIT OPIUM per Head.

## TABLE II.

### SHOWING the DISTRICTS of BRITISH PROVINCES arranged according to their AVERAGE ANNUAL CONSUMPTION of LICIT OPIUM per Head.

| Six Grains and under. | | From 7 to 12 Grains. | | From 13 to 24 Grains. | | From 25 to 48 Grains. | | From 49 to 96 Grains. | | From 97 to 144 Grains. | | 145 Grains and upwards. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District. | Population. | District. | Population. | District. | Population. | District. | Population. | District. | Population. | District. | Population. | District. | Population. |
| TOTAL, BRITISH PROVINCES. | 83,048,059 | TOTAL, BRITISH PROVINCES. | 24,840,925 | TOTAL, BRITISH PROVINCES. | 36,103,918 | TOTAL, BRITISH PROVINCES. | 39,796,947 | TOTAL, BRITISH PROVINCES. | 17,611,112 | TOTAL, BRITISH PROVINCES. | 5,915,006 | TOTAL, BRITISH PROVINCES. | 4,384,394 |
| ASSAM - - - | 2,276,163 | BENGAL - - | 10,426,087 | ASSAM - - - | 650,208 | ASSAM - - - | 367,542 | ASSAM - - - | 122,867 | ASSAM | 634,249 | ASSAM - - - | 1,382,170 |
| 1. Sylhet. | | 1. Bogra. | | 1. Goalpara. | | 1. Kachar. | | 1. Naga Hills. | | 1. Kamrup. | | 1. North Kachar. | |
| 2. Garo Hills. | | 2. Bankurah. | | 2. Khasi Hills. | | | | | | | | 2. Darrang. | |
| | | 3. Nadea. | | | | BENGAL - - - | 11,116,335 | BENGAL - - | 994,625 | BERAR - - | 574,782 | 3. Nowgong. | |
| BENGAL - - - | 35,345,876 | 4. Khulna. | | BENGAL - - | 12,312,270 | 1. Maldah. | | 1. Balasore. | | 1. Akola. | | 4. Sibsagar. | |
| 1. Jalpaigori. | | 5. Jessore. | | 1. Darjiling. | | 2. Hughli. | | | | | | 5. Lakhimpur. | |
| 2. Pabna. | | 6. Bakarganj. | | 2. Purneah. | | 3. Midnapur. | | BERAR - - - | 1,187,117 | BOMBAY - - | 921,712 | | |
| 3. Santhal Parganahs. | | 7. Lohardaga. | | 3. Rajshahye. | | 4. Howrah. | | 1. Buldana. | | 1. Ahmedabad. | | BENGAL - - | 874,450 |
| 4. Faridpur. | | 8. Singhbhum. | | 4. Dinajpur. | | 5. The 24 Parganahs. | | 2. Amraoti. | | | | 1. Calcutta and suburbs. | |
| 5. Noakhali. | | | | 5. Rangpur. | | 6. Chittagong. | | | | MADRAS - - | 2,078,782 | | |
| 6. Tipperah. | | BOMBAY - - | 1,414,452 | 6. Bardwan. | | 7. Cuttack. | | BOMBAY - - | 5,353,101 | 1. Godavari. | | BERAR - - - | 315,798 |
| 7. Dacca. | | 1. Thana. | | 7. Birbhum. | | 8. Puri. | | 1. Kaira. | | | | 1. Elichpur. | |
| 8. Maimansingh. | | 2. Kolaba. | | 8. Murshidabad. | | | | 2. Panch Mahals. | | OUDH - - - | 774,163 | | |
| 9. Hazaribagh. | | | | 9. Patna. | | BERAR - - - | 869,794 | 3. Khandesh. | | 1. Lucknow. | | BOMBAY - - | 1,163,254 |
| 10. Palamau. | | CENTRAL PROVINCE - | 325,613 | | | 1. Basim. | | 4. Ahmednagar. | | | | 1. Broach. | |
| 11. Manthum. | | 1. Damoh. | | BOMBAY - - | 1,225,989 | 2. Wun. | | 5. Poona. | | PANJAB - - | 931,318 | 2. Bombay City. | |
| 12. Champaran. | | | | 1. Satara. | | | | 6. Sholapur. | | 1. Simla. | | | |
| 13. Saran. | | MADRAS - - | 1,896,803 | | | BOMBAY - - - | 1,498,571 | | | 2. Ferozpur. | | PANJAB - - | 648,722 |
| 14. Muzaffarpur. | | 1. Ganjam. | | SINDH - - - | 1,090,045 | 1. Surat. | | SINDH - - | 1,781,729 | | | 1. Ludhiana. | |
| 15. Darbhanga. | | | | 2. Shikarpur and Jacobabad. | | 2. Nasik. | | 1. Karachi. | | | | | |
| 16. Gaya. | | NORTH-WEST PROVINCES. | 3,624,357 | | | | | 2 and 3. Hydrabad and Thar and Parkar. | | | | | |
| 17. Shahabad. | | 1. Farakhabad. | | CENTRAL PROVINCES | 1,289,353 | CENTRAL PROVINCES | 6,518,766 | | | | | | |
| 18. Monghyr. | | 2. Mainpuri. | | 1. Saugor. | | 1. Bhandara. | | CENTRAL PROVINCES | 1,912,814 | | | | |
| 19. Bhagalpur. | | 3. Budaun. | | 2. Chanda. | | 2. Raipur. | | 1. Nagpur. | | | | | |
| | | 4. Ghazipur. | | | | 3. Bilaspur. | | 2. Wardha. | | | | | |
| BOMBAY - - - | 4,413,191 | | | MADRAS - - | 1,855,582 | 4. Sambalpur. | | 3. Balaghat. | | | | | |
| 1. Ratnagiri. | | OUDH - - | 4,225,577 | 1. Kistna. | | 5. Nimar. | | 4. Seoni. | | | | | |
| 2. Kanara. | | 5. Rai Bareli. | | | | 6. Hoshangabad. | | | | | | | |
| 3. Belgaum. | | 6. Sitapur. | | NORTH-WEST PROVINCES. | 7,800,659 | 7. Narsinghpur. | | NORTH-WEST PROVINCES. | 2,299,778 | | | | |
| 4. Dharwar. | | 7. Hardoi. | | 1. Pilibhit. | | 8. Jabalpur. | | 1. Dehra Dun. | | | | | |
| 5. Bijapur. | | | | 2. Etawah. | | 9. Mandla. | | 2. Cawnpore. | | | | | |
| | | PANJAB - - | 2,928,036 | 3. Etah. | | | | | | | | | |

| | |
|---|---|
| MADRAS - - - | 26,443,980 |
| 1. Nellore. | |
| 2. Karnul. | |
| 3. Cuddapah. | |
| 4. Anantapur. | |
| 5. Bellary. | |
| 6. North Arcot. | |
| 7. South Arcot. | |
| 8. Chenglepat. | |
| 9. Tanjore. | |
| 10. Trichinopoly. | |
| 11. Madura. | |
| 12. Tinnevelly. | |
| 13. Salem. | |
| 14. Coimbatore. | |
| 15. South Kanara. | |
| 16. Malabar. | |
| NORTH-WEST PROVINCES | 8,421,990 |
| 1. Gorakhpur. | |
| 2. Basti. | |
| 3. Almora. | |
| 4. Garhwal. | |
| 5. Ballia. | |
| 6. Azamgarh. | |
| OUDH - - - | 4,576,891 |
| 7. Gonda | |
| 8. Bara Banki. | |
| 9. Pratapgarh | |
| 10. Sultanpur. | |
| PANJAB - - - | 1,569,992 |
| 1. Gujrat | |
| 2. Bannu | |
| 3. Dhang | |
| 1. Kangra. | |
| 2. Hazara. | |
| 3. Dera Ismail Khan. | |
| 4. Shahpur. | |
| 5. Gurgaon. | |
| 4. Banda. | |
| 5. Mirzapur. | |
| 6. Bareli. | |
| 7. Shahjahanpar. | |
| 8. Bijnor. | |
| 9. Jaunpur. | |
| OUDH - - - | 3,074,210 |
| 1. Kheri. | |
| 2. Unao. | |
| 3. Faizabad. | |
| PANJAB - - | 6,805,602 |
| 1. Sialkot. | |
| 2. Jhilam. | |
| 3. Rawal Pindi. | |
| 4. Peshawar. | |
| 5. Kohat. | |
| 6. Dera Ghazi Khan. | |
| 7. Muzaffargarh. | |
| 8. Multan. | |
| 9. Montgomery. | |
| 10. Hissar. | |
| 11. Rohtak. | |
| 10. Chind wara. | |
| 11. Betul | |
| MADRAS - - | 3,355,307 |
| 1. Vizagapatam. | |
| 2. Madras City. | |
| 3. Nilgiris. | |
| NORTH-WEST PROVINCES. | 12,107,475 |
| 1. Tarai. | |
| 2. Saharanpur. | |
| 3. Muzaffarnagar. | |
| 4. Meerut. | |
| 5. Aligarh. | |
| 6. Agra. | |
| 7. Mathura. | |
| 8. Allahabad. | |
| 9. Fatehpur. | |
| 10. Jalaun. | |
| 11. Jhansi. | |
| 12. Hamirpur. | |
| 13. Moradabad. | |
| PANJAB- - | 3,968,157 |
| 1. Gurdaspur. | |
| 2. Hoshiarpur. | |
| 3. Gujranwala. | |
| 4. Dehli. | |
| 5. Karnal. | |
| 3. Benares. | |
| PANJAB - - | 4,009,086 |
| 1. Ambala. | |
| 2. Amritsar. | |
| 3. Lahore. | |
| 4. Jalandhar. | |

# TABLE III.

SHOWING the POPULATION under each GROUP of AVERAGE CONSUMPTION by PROVINCES, in relation to the TOTAL POPULATION of the GROUPS and the PROVINCES respectively.

| Province. | A.—Per-centage of Provincial Population in each Group on the Group Total. | | | | | | | B.—Per-centage of Provincial Totals on the Total of British Provinces. | | C.—Per-centage of Provincial Population in each Group on the Provincial Total. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Average Annual Consumption of Licit Opium per Head. | | | | | | | | | Average Annual Consumption of Licit Opium per Head. | | | | | | | |
| | Under 7 Grains. | 7–12 Grains. | 13–24 Grains. | 25–48 Grains. | 49–96 Grains. | 97–144 Grains. | 145 Grains and over. | Consumption of Opium in 1892–93. | Population (1891). | Under 7 Grains. | 7–12 Grains. | 13–24 Grains. | 25–48 Grains. | 49–96 Grains. | 97–144 Grains. | 145 Grains and over. | Total Population. |
| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. |
| Assam | 2·8 | — | 1·8 | 0·9 | 0·7 | 10·7 | 31·5 | 13·3 | 2·6 | 41·9 | — | 11·9 | 6·8 | 2·3 | 11·7 | 25·4 | 100·0 |
| Bengal | 42·6 | 42·0 | 34·1 | 27·9 | 5·6 | — | 19·9 | 19·1 | 33·6 | 49·7 | 14·8 | 17·3 | 15·6 | 1·4 | — | 1·2 | 100·0 |
| Berar | — | — | — | 2·3 | 6·4 | 9·7 | 7·2 | 4·6 | 1·4 | — | — | — | 30·0 | 59·3 | 19·8 | 10·9 | 100·0 |
| Bombay | 5·3 | 5·7 | 3·4 | 3·8 | 30·4 | 15·6 | 26·6 | 13·1 | 7·5 | 27·5 | 8·9 | 7·7 | 9·3 | 33·5 | 5·8 | 7·3 | 100·0 |
| *Sindh* | — | — | 3·0 | — | 10·1 | — | — | 2·2 | 1·4 | — | — | 38·0 | — | 62·0 | — | — | 100·0 |
| Central Provinces | — | 1·3 | 3·6 | 16·4 | 10·9 | — | — | 6·2 | 4·7 | — | 3·2 | 12·8 | 61·9 | 19·1 | — | — | 100·0 |
| Madras | 31·8 | 7·6 | 5·1 | 3·4 | — | 35·2 | — | 9·0 | 16·8 | 74·3 | 5·3 | 5·2 | 9·4 | — | 5·8 | — | 100·0 |
| North-West Provinces | 10·1 | 14·6 | 21·6 | 30·4 | 13·1 | — | — | 14·3 | 16·2 | 24·6 | 10·6 | 22·8 | 35·3 | 6·7 | — | — | 100·0 |
| *Oudh* | 5·5 | 17·0 | 8·5 | — | — | 13·1 | — | 3·3 | 5·9 | 36·2 | 33·4 | 24·3 | — | — | 6·1 | — | 100·0 |
| Panjab | 1·9 | 11·8 | 18·9 | 9·9 | 22·8 | 15·7 | 14·8 | 15·0 | 9·9 | 7·5 | 14·0 | 32·6 | 19·0 | 19·3 | 4·5 | 3·1 | 100·0 |
| Total, British Provinces | 100·0 | 100·0 | 100·0 | 100·0 | 100·0 | 100·0 | 100·0 | 100·0 | 100·0 | 39·2 | 11·7 | 17·1 | 13·8 | 8·3 | 2·8 | 2·1 | 100·0 |

N.B.—Parts A. and B. should be read vertically. Part C. horizontally.

VOL. VII.

# FINAL REPORT

OF THE

# ROYAL COMMISSION ON OPIUM.

## PART II.

## HISTORICAL APPENDICES;

TOGETHER WITH

## AN INDEX OF WITNESSES AND SUBJECTS,

## AND A GLOSSARY OF INDIAN TERMS USED IN THE EVIDENCE AND APPENDICES.

Presented to both Houses of Parliament by Command of Her Majesty.

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54510 Wt P. 2150

# APPENDIX A.

## NOTE ON THE HISTORY OF OPIUM IN INDIA AND OF THE TRADE IN IT WITH CHINA.

By Sir JAMES B. LYALL, G.C.I.E., K.C.S.I.

### Prefatory Note.

The Note, dated February 15th, which is printed below, was written in response to the Chairman's suggestion that members should read up different branches of the subject, and record notes which could be circulated for the information of the Commission, and be eventually published as Appendices to the Report if that seemed desirable. It was intended to refer especially to the export trade in Indian opium. I wrote it hastily in intervals of leisure while travelling with the Commission in India, and compiled the historical parts from statements of fact gathered from official reports put before us by the Government of India, previous notes by Drs. Edkins, Medhurst, and Watt, and Mr. George Batten, C.S.J., some Blue Books, and many anti-opium and pro-opium books and pamphlets.

It was completed, and copies sent to the members of the Commission before the final sitting in India, at which important resolutions embodying our impressions of the evidence taken were adopted. It is, therefore, reproduced in its original form. But as I had not had time to verify my quotations and inferences by reference to the original authorities, Mr. Dane, who was going to England on duty in connexion with the Commission, offered to make use of the library and record rooms of the India Office, and prepare a *précis* of all the information bearing on the historical parts of my Note which he could find there.

Mr. Dane has devoted some time to this task, and the result is the valuable Memorandum printed as Appendix B. in this volume of our Proceedings.

Comparison with Mr. Dane's Memorandum shows some mistakes in the first three pages of my Note. I was wrong in saying that a Chinese writer of the 12th century distinctly described the preparation of opium: I referred to the extract from a medical work by Lin Hung given in paragraph 7 of Dr. Edkin's Historical Note, but I see that Lin Hung's "poppy milk fish" were a decoction made with the juice extracted from poppy capsules, which is not quite the same thing, though no doubt similar in effect. On the other hand, Mr. Dane does not mention Dr. MacGowan who has found evidence in Chinese records that the abuse of opium prevailed in parts of China as far back as the end of the 13th century. Dr. MacGowan is quoted in paragraph 6 of the letter of the Bengal Chamber of Commerce which forms one of our Appendices, and I have seen him elsewhere referred to as an undoubted authority. He is, I believe, a missionary and Chinese scholar. Again, I attributed the origin of the Mogul monoply to Akbar's time, whereas it seems certain that it began later, or it would have been mentioned by Abul Fazal. I also assumed, as has been generally done, that the Mogul monopoly was a general measure in Northern India, but I now think it was peculiar to Behar and country adjacent. There is no tradition or record of its having existed elsewhere, and Warren Hastings and Sir John Macpherson writing when the matter first attracted attention, appear to have thought that it was confined to Behar. These mistakes are not important, and do not touch my argument or its conclusions; but I see from information new to me in Mr. Dane's Memorandum, that my description of the origin of the Bengal monopoly is incomplete, and that my surmises as to Warren Hastings' motives and intentions are often wrong; also that the East India Company's early relations to the opium trade were very small, and even more irreproachable than I imagined. My Note also seems deficient, as it gives no explanation of how the old trade in opium was diverted so largely into European hands.

For these reasons I have written the following paragraphs, which I wish to be read as a correction and enlargement of the first three pages of my Note of February 15th :—

1. It seems certain that opium must have been carried as a medicine to India, and perhaps to China, long before Mahommedan times, for it was in high repute and largely produced in the countries on the eastern shores of the Mediterranean in the first century of our era; and long after, as well as long before, that century, the whole of the great trade between Europe and the Indies flowed through those very countries. A valuable drug like opium must have formed an item of the trade, though not perhaps in quantities to attract attention. It is said to be mentioned in Indian medical works supposed to belong to the 8th century. This is asserted in paragraph 29 of the Bengal Chamber of Commerce's letter, and was also deposed to by witnesses at Bombay.

But, however that may be, there is good reason to believe that the use of the drug, as a stimulant, and the cultivation of the poppy on a large scale for the production of opium, are comparatively recent in Eastern Asia, and were introduced by Musalman power and influence. We know how rapidly that power extended over Syria, Egypt, and Persia after the first establishment in Arabia, early in the seventh century, of the religion of Islam. The fact that alcohol was strictly forbidden by the commandments of the new religion would naturally lead its votaries in Arabia, Syria, Egypt, and Persia, to fall back on other stimulants known to them, like opium and hemp drugs, which had escaped prohibition. Rigid puritans might hold opium also forbidden by implication, as the Wahabis of Arabia have to this day asserted regarding tobacco, but this would be the doctrine of a minority. There are many local indications that the opium habit and the extensive cultivation of the poppy came into India with the Musalman invaders—Arab, Persian, and Turk—who in the 8th century conquered Sindh from the sea, and in the eleventh began the series of invasions from Afghanistan which gradually brought almost all India under Musalman rule or influence. The exact date of the introduction is not known, but from the Portuguese descriptions written in the commencement of the 16th century of the common and inveterate nature of the habit in India, and of the quantity exported, the Indian production and consumption must have then been large and of old standing. The great producing districts from which the export trade was then supplied may be identified from the Ain-i-Akbari, written a little later, in which the poppy is described as a staple crop in the greater part of Northern India, and in the Province of Malwa. It must have taken at least two or three hundred years of gradual introduction to extend the cultivation and habit over such large areas, for the Indian does not quickly adopt a new crop or a new habit.

As to China, the production and habitual use of opium (as distinct from the use of the seed and capsules of the poppy), seem to have reached that country also through the Musalmans, but of course much later. According to Dr. MacGowan the use of opium came in with the Mongols, who established the Yuen dynasty in China in A.D. 1260. The Mongols, must have been familiar with opium from their previous conquests of Turkistan and Persia, and probably imported it from those countries. According to Dr. Edkins, production of opium in China is first distinctly mentioned in Chinese literature by Wang Hsi, who wrote in the 15th century. He found the cultivation established in those parts of Western China where there was then a Musalman population. Foreign opium must have been consumed at the same time in the coast districts of China, for, as is proved by the authorities quoted by Mr. Dane, the Portuguese in the commencement of the 16th century found both Arabs and Indians trading in opium with the Chinese and other nations to the east of India. It is a significant fact that ancient passages from Chinese poets and writers quoted by Dr. Edkins show that before opium was known drinks and decoctions which do not seem to have been medical were made from poppy seeds, and the juice expressed from poppy capsules.

II. The above account brings us to the end of the 15th century when the European navies and merchant adventurers first appeared, and gives, I think, all the history of the case previous to that time which is required. Up to then the sea trade in India and China Seas had been entirely in Oriental hands, all the nations of Asia taking a share, though the seafaring Musulmans from the coasts of the Red Sea and Persian Gulf seem to have made the longest voyages, and to have held a dominant position in respect to sea power. The shipping employed must have been large, as besides effecting exchange of goods between all the nations of Asia it carried also the rich trade in Asiatic products which then flowed through Egypt and Syria to Europe. The discovery of the Cape route made a great change in the situation, and in the course of the two centuries that followed the old Oriental sea trade was greatly depressed and disorganised by the superior power and enterprise of the Europeans, who transferred to themselves by fair means or foul most of the trade or carriage of the more valuable articles, opium included.

The Portuguese discovered the Cape in 1488, but it was 10 years later that they first crossed the Indian Ocean, and appeared on the West Coast of India. In the next 20 years they had visited the coasts of Arabia, Persia, and India, the Malacca Straits, the great Islands of the Malay Archipelago and China itself, and had established themselves on land in many places. All this time they carried on fierce fights with the Moors or Musalman sailors, in which both parties were, I suppose, equally often the aggressors. How the Portuguese and Spaniards commonly behaved, even to peaceable Orientals, may be guessed by those who know how they behaved in those days to the Indians of America. The letter of 1511, quoted by Mr. Dane, describing the piratical capture of eight Gujarati ships, laden with opium and other goods, refers to what was a common procedure.* Many of these Portuguese and Spanish sailors were pirates, buccaneers, and slave dealers rather than merchants. The exclusive policy commenced by the Chinese in this century, and suddenly adopted later on by the Japanese, was no doubt due to their conduct. India had been assigned to the Portuguese in the partition of all the Indies which the Pope made between them and the Spaniards, and these two nations claimed, and practically enforced, against other Europeans till the end of the 16th century, a monopoly of all the trade with Asia round the Cape.

At the very end of this century many Dutch and English adventurers were trying, at the risk of their lives, to share in this trade, and in 1600–1602 the London and Dutch East Indies Companies were formed, really as the only way of forcibly disputing and breaking down the monopoly of the Spaniards and Portuguese, who showed no mercy to ships of other European nations not strong enough to fight them. By 1612 the Dutch and English had factories on the west coast of India at Surat, and a little later they had established others on the east coast, and on the Hugli in Bengal. Though the Dutch and English quarrelled and fought among themselves, they co-operated against the Spanish and Portuguese, and by the middle of this, the 17th, century the trade of the latter with India had much diminished, and half their possessions in the Indian and China seas had passed into the hands of the Dutch, who began the policy of territorial acquisitions long before the English did. About this time the French and Danes also came in, and established factories on both coasts and on the Hugli.

Though monopolies of trade to the Indies had been granted by various European Governments, the companies so formed could not practically keep out private adventurers even of their own nationality, and swarms of these interlopers came in, and traded under licenses obtained from the Companies or without them. All the European sea traders were more or less violent and lawless in their dealings with the natives, particularly on the sea, where at this time the only law in this part of the world was that of force. The decay of the old native sea trade, and the transfer to the Europeans of most of the commerce in articles of high value, opium included, therefore continued.

The Dutch had from the first taken the lead in the Bengal opium export trade from the Hugli, and though in the course of this century the English established a great predominance over them in general trade with India, yet they retained their lead in this item. They wanted opium for their trade to Ceylon, the Malacca Straits, and the Malay Archipelago, in which countries they had by this time, to a great extent, beaten us out of the field. The Dutch East India Company's records show that by arrangement with Native Princes it attempted to monopolise the import of opium into these countries, principally with the object of breaking down the old native sea trade, and so monopolising commerce of all kinds. The Portuguese had from the first been the chief European exporters of Malwa opium, and never lost their ports on the Gulf of Cambay, which were the most convenient for it. The opium they exported mostly went to China, where they had established, in 1537, the important settlement of Macao, a hundred years before our first attempt to trade with China.

All the European sea traders took part more or less in the opium export trade. They did so, not because much was wanted in Europe, though some did go there, but mainly because opium was one of the few articles for which there was always a steady demand in most of the countries to the East of India. It was in fact very profitable to buy it cheap in India in exchange for European goods, or gold and silver, and to exchange it further east at high value for the silks, tea, pepper, and spices, which were in so great demand in Europe. Being also extremely portable and durable, opium was of course an excellent substitute for money in dealing with countries where trade had always been mainly by barter, and where few European goods were wanted. These reasons, and the decay of the native sea trade explain why in the course of these two centuries the export of Indian opium was for the most part diverted into European hands. The production in India was probably stimulated by the activity of the European traders demand, and by the falling off of the supply of opium from the Turkish empire, which the old Arab trade used to convey. But there are no signs that the consumption in India increased after the Europeans came on the scene: indeed, the contrary may be inferred

* Mr. F. C. Danvers' recent history of the Portuguese Dominion in the Indies shows that the Portuguese deliberately set to work to destroy the sea-trade of the eastern nations.

from the first accounts we have of the prevalence of the habit in India given by Portuguese, Dutch, and Musalman writers of the 16th century, and from the large quantities reported to have gone in the 16th and 17th centuries from Bengal and Malwa to Malabar, and the Deccan, where the consumption is now very small. It seems very likely that the introduction of tobacco in the 17th century led to a decrease in consumption of opium in some parts of India. When tobacco was unknown, and alcohol in disgrace among Hindus as well as Mahommedans, it is likely that indulgence in opium would widely prevail.

So far as India and its opium trade are concerned the state of things which prevailed in the 17th century was not materially changed in the first half of the 18th, but it may be noted that opium smoking had begun to largely take the place of tobacco smoking in China by the beginning of the 18th century, and this led to a gradual great increase in the Chinese demand for opium.

III. The next stage in the history of the subject begins with our occupation of Bengal in 1758. For some years before this, the decay of the authority of the Mogul Government and consequent confusion, had permitted or even forced, the Europeans to raise troops, and turn their factories into fortresses, held practically independent of the Native Governments.

This led to quarrels with some Native Princes and alliances with others, to wars between us and the French in India, and eventually, in 1758, to the military occupation of Bengal and Behar, by the forces of the British East Indies Company after a war provoked by the brutality of the Nawab. By this, the Company became military masters of a great territory which happened to include the town of Patna. This town was a place where the European sea-traders settled on the Hugli had their furthest inland agencies for trade of all kinds with Northern India, and it was in particular the emporium from which they drew their supplies of northern, or which we now call Bengal, opium for export to the East.

It is important to understand clearly how out of this position grew the system known as the Bengal monopoly, which has been so much abused and misrepresented. To explain this it seems necessary to begin by describing the condition under which opium was produced and sold before we interfered.

From all that is known it may be safely inferred that everywhere in India the ryot was originally as free to cultivate and sell opium as any other crop. He sold to whom he pleased, but generally to a merchant or moneylender, from whom in ordinary Indian fashion he had taken advances on the security of the crop. There is no record or tradition of any special system having been employed by former rulers to encourage or restrict the cultivation of opium in India; and in Persia, Afghanistan, and Turkistan where the cultivation has long existed, it seems to be on the same footing as that of any other crop. As our rule spread gradually over India from 1758 to 1858, we found poppy cultivation great or small in almost every district where climate and soil was suitable, and everywhere we found the ryot free to cultivate and to sell it. These are the conditions generally prevailing at the present day in Native States to which our interference has not extended, and with one exception they seem to have prevailed everywhere till our administration began. The exception is that a monopoly of purchase of opium from the ryots seems to have been imposed some time in the 17th century on the tract of country from which the opium dealers of Patna drew their supplies. Probably the large fortunes made by these particular dealers in supplying the European and other sea traders with opium tempted the rulers of the day to make revenue out of the trade in a way well known to Oriental rulers, and often applied by them to very valuable articles of produce. The monopolist having sole control of the market, could keep down the price to the cultivators and raise it on exporting merchants or retail dealers, and so make great profits, out of which he would have to pay a heavy fee into the State Treasury. The authorised existence of this local monopoly of purchase of opium had died out some time before 1758 owing to the confusion of the Mogul Empire, or some other cause. But, as is well known, usage and tradition are very strong in India, particularly where backed by men of wealth and power, and this probably explains the fact that when we occupied Behar, we found a ring of rich opium dealers established at Patna, who had long maintained without any recognised authority a practical monopoly. They were able by their influence and combination to prevent the cultivators or small country dealers from dealing with outsiders, and to fix the prices at which the European merchants or other sea traders should get from them the pick of the market. The Europeans were in too insecure a position to go out and deal direct with the cultivators, and the Native Government, out of jealousy of foreigners, would have supported the ring against them if they had dared to try.

IV. This is how the matter stood before 1758, when after a short period of more than ordinary turmoil, which temporarily half ruined the trade, the British East India Company stood forth as military master of Bengal and Behar. As soon as that occurred, it was of course certain that the power of the ring would not last long.

The Company did not at first attempt to administer the territories, and left that duty to the Nawab it had set up. Though in 1765 it was forced to undertake the collection of the revenue, it did not take over the control of the whole administration from the Native authorities till 1773. In the interval the dual government which existed was naturally very disorderly, too weak to defend the Natives, but strong enough to oppress them to any extent. The commercial agents and servants of the Company had always been allowed to trade for themselves as well as to execute commissions for their masters; they soon began to have some administrative functions added to their old duties, but even before that they had great authority over the Natives. Most of them quickly used these irresponsible powers to make fortunes for themselves by, as far as possible, monopolising all the articles most valuable for the export trade. The Company's agents at Patna, who went by the name of the Patna council, acted like the rest, and as in the case of opium they found a monopoly ready made in the hands of the ring, they almost at once appropriated it, not on behalf the Company, but for the benefit of their own private trade. The Natives submitted but the Dutch and French companies' agents at Patna made a strong resistance, sending their own purchasers into the field, and after much conflict the Patna council, in 1765, prudently settled the dispute by admitting them to a subordinate share. Under this arrangement the Patna council, through its native agent or contractor, was the sole purchaser from the ryots and small country dealers, but the Dutch and French got certain shares out of the total opium collected. This usurped monopoly must have brought great wealth to the Patna council, who could, no doubt, sell all their opium to the sea-trading merchants at Calcutta at much higher prices than they paid to the ryots; but it was not complete, as the ryots knew how to meet intimidation by evasion, and as, in the absence of real authority, European interlopers forced themselves in and bought direct. All this led to affrays and troubles of various kinds.

V. At last, when Warren Hastings was made Governor-General in 1773, and was given by Statute full powers to organise a proper Government, one of the first reforms he undertook was that of depriving the Company's servants of the privileges of private trade which they had abused, and breaking down the

irregular monopolies of all kinds which they had created. But when in the course of those inquiries the case of this Patna opium monopoly had to be considered, it was seen to be of a special and important nature, and after full discussion in Council at Calcutta it was decided not to set the trade in opium free, but to take over and authoritatively maintain the monopoly as a measure of State for the benefit of the public revenue.* The traditional monopoly of the Mogul Government and the subsequent continuous subjection of the ryots of Behar, to monopolies not strictly authorised, but supported by power and influence, were taken as a justification, and it was held that, in the existing circumstances of the administration of the country† and the trade, the ryots, would be more injured than benefitted by free trade in the drug. In reply to the argument that free trade would increase production, Hastings urged that increase was undesirable in the case of a pernicious luxury like opium, as it would carry with it increase of internal consumption, which it was desirable to restrict. The policy of the State monopoly was again disputed in council in 1776, Francis being opposed to all monopolies on general principles, but the rest of the council adhered to their former decision. In the same year, and again in 1778 and 1782, the London Directors of the East India Company in their correspondence with the Calcutta Government expressed dislike of the monopoly as a measure of oppression to the opium cultivators by depriving them of the full value of their produce, and suggested that the trade should be left open, subject to a customs duty. Nothing came of this suggestion which was no doubt thought impracticable in India. But it was one of the charges on which Warren Hastings was indicted that the monopoly was a despotic interference with the liberty of the Ryot, and that he should have complied with the Directors' suggestion.

In maintaining the monopoly for the State the Calcutta Government did not materially change its old form, in fact they at first gave the monopoly of purchase from the ryots and others to the same Native contractor who had been employed by the Patna council, who used to deliver to that body at the arranged contract price all the good opium fit for export which he could collect. Now, he had to deliver it at Calcutta to be sold there for the benefit of the Company's Government. As to the sale the orders were that the bulk of the opium was to be sold at public auction for export only to the highest bidder, but certain amounts were to be reserved from actual auction for the Dutch and French Companies and for the British East India Company on its commercial side. These amounts the Companies were to take over at average auction prices. The amount to be reserved for the British East India Company was small, and was intended only for the trade use of their commercial factory in Sumatra.‡

VI. It is important to observe that with this small exception for the Sumatra factory the East India Company's Government at Calcutta did not intend that the Company should itself engage in the opium export trade to China or elsewhere. Nor does the Company seem to have previously engaged to any larger extent in that particular branch of trade, even when it was a commercial company only. There is the evidence of Mr. J. Hinchman before the Select Committee of the House of Commons in 1773 to the effect that down to 1772 the East India Company did not invest in Bengal opium except to a small amount wanted for trade in Sumatra. For some reason they did invest to a larger extent in 1772, but next year, in making the permanent arrangements connected with the monopoly, they reverted to the policy of only investing for the Sumatra trade. The opium which used to be bought at Patna by the British in competition with the Dutch, French, and Danes, and others, in the period before the British became masters of Bengal and Behar, much of which no doubt went to China, must apparently have been bought by British traders on their private account. As to this, Captain Alexander Hamilton's notice in 1727 of opium the property of other merchants being conveyed in the Company's fleet from Patna to Calcutta, with the Company's saltpetre, piece goods, and silk is worth note. If the Company also itself bought some opium at Patna in those days other than that wanted for Sumatra it probably sold it at Calcutta, and used the money so obtained for what they called "investment," that is, purchase of goods in China and elsewhere. There was always difficulty in providing enough silver for this purpose. This was the head of account to which the Directors at home wished the revenue derived from the new State monopoly to be credited when the question was raised in 1775 and referred to them. But the Calcutta Government rightly held that it was territorial revenue, and their view seems to have been finally adopted. The point in difference was not very material, as surplus territorial revenue was in those days used by the Company for trade investment purposes.

VII. Almost as soon as the Company's Government had by the new State monopoly got into its hands all the good opium of Bengal and Behar fit for the Calcutta export market, it naturally occurred to some of its servants that it was in a position to go still further. By force of the monopoly the Government had appropriated for the benefit of the State the whole profits which the old merchant manufacturers who bought from the cultivators and sold to the sea traders used to make, and that addition to the sale price of their opium which the cultivators would have got if they had been allowed to sell in open market. Why should not the Government take one further step and appropriate also the profits of the sea traders by itself shipping the opium for sale in the ports of China and other countries to the East? This suggestion was made in 1775 by the revenue officers of Patna, one of whose duties it was to superintend the working of the monopoly. They estimated in their letter that if the French and Dutch were kept out and smuggling stopped, they could supply at least 33,000 chests of Bengal and Behar opium, which the Company would be able to sell at an enormous profit in China. When this letter came before the Council at Calcutta the suggestion that the Company should itself export seems to have been dropped by common consent without discussion, but Hastings proposed that direct official agency should be employed for purchase of the opium in place of the contractor. This proposal was no doubt made with reference to the enormous loss by smuggling, that is, sale to other persons than the contractor, which the report indicated. The majority of the Council, however, decided against Hastings' proposal, and the matter dropped.

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* It appears that though the profits of the monopoly were intended to form a branch of the public revenue, it was at this time part of the plan that they should be temporarily set aside as a fund from which to pay compensation to those servants of the Company who were being deprived of long-enjoyed privileges of private trade.

† The Council were no doubt right in thinking that with the weak hold they then had of the country free trade in opium would have given great trouble to the administration and been of no benefit to the ryots. Direct dealing between the Europeans of different nationalities, or their native agents, and the ryots would have been politically objectionable in those days, and would have led to great disorders. In much later times the system by which European Indigo manufacturers gave advances to ryots for the cultivation of indigo led to fraud and oppression and constant affrays.

‡ The Company probably exported opium themselves to their Sumatra settlements in imitation of the Dutch, who in their Malay possessions in Sumatra and elsewhere, generally adopted the policy of making the import of opium a State monopoly. That is how it still stands in Java; but it is estimated by Dutch authorities that the State only imports half the opium consumed in Java; the other half being smuggled in by private traders.

In 1781, however, the Calcutta Government was induced, by great want of money and by a temporary collapse of the sales of its opium in Calcutta, to deviate from its settled policy, and export two shiploads of opium on its own account to China and the Straits.* The particulars of this transaction are given in Mr. Dane's Memorandum, but he does not fully explain the historical events which led to the emergency. The fact is that we were then at war at sea with the French, Dutch, and Spaniards, and on land in India with Hyder Ali of Mysore and the Mahrattas. The Calcutta market was thereby closed to all the chief foreign exporters, and our own merchant ships were employed in exporting supplies to Madras. The sea also was unsafe for ships flying the English flag. Under these circumstances the opium at Calcutta fell, of course, to a very low price, and the Calcutta Government lost a considerable revenue at a time when its exchequer was drained by the most extraordinary war expenses.

This enterprise was condemned by the Court of Directors as contrary to their settled policy, and beneath their dignity in respect to China, where opium was liable to be treated as contraband. It was not repeated, and the monopoly worked by contract continued without change of system till Lord Cornwallis reformed it by substituting direct official agency. The reasons which led him to make this change, and the subsequent history of the monopoly are sufficiently given in my original Note.

J. B. LYALL.

November 24, 1894.

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(*a.*) *Growth of the Poppy and use of Opium in India and Trade in it from India towards China and other Countries to the East in the Time before European Navies appeared in India and China Seas.*

1. The people of India would say, if asked, that poppy has been cultivated and opium produced from time immemorial like wheat or any other staple crop. Learned inquirers, however, deduce from the Indian word for opium and from some negative evidence derivable from ancient Hindu literature that the cultivation and production must have been introduced by the Arabs, who were of course in close relations with Egypt and Asia Minor, where opium production was an important industry in the first century of the Christian era.

2. The Arabs were the first people who made long voyages in Eastern Seas. Their command of the sea led to their conquest of Sindh in the eighth century, and long before that their ships were carrying on a regular trade with China as well as India. They probably introduced the cultivation of the poppy into both India and China in this century, if not previously. We know from very early Chinese writers that the Arab merchants brought poppy capsules to China, and again from Chinese writers of the tenth and eleventh centuries that the poppy was then widely cultivated in China, and the capsules and seeds used for medicine and stimulating drinks; again, the preparation of opium is distinctly described by a Chinese writer of the twelfth century; and from Chinese writers of the fifteenth century it is proved that by that time the production of opium was an established industry in China. There is no record in Indian literature that opium was produced in India so early, but that literature till the later Mahomedan times was so vague on subjects of the kind that the negative evidence deducible from the fact is of little weight. The probability seems to be that the cultivation of the poppy and production of opium began in India at least as soon as in China. We know at all events that when at the very commencement of the sixteenth century the Portuguese were the first Europeans to enter the Indian and China Seas, they found opium an important article of the trade carried on by the Arab and Indian merchants to Burma, the Malay Peninsula, China, and the islands of the Archipelago. Egyptian, Arabian, and Indian opium all formed part of the trade supply, but the Indian product exceeded the rest in quantity. Most of the Indian article seems at this time to have been exported from the Bombay coast, but some little came from the Madras and more from the Bengal coast. Another fact which proves that the production of opium must have been established in India long before the sixteenth century is the mention in the "Aini-Akbari," the great history of Akbar's reign, of the poppy as a staple crop in the *subahs* or Mogul provinces which comprised the north-west part of India—from Benares to Multan, and in the country which now produces the Malwa opium. To have become a staple crop over such a large extent of country in Akbar's time it must have been long before introduced. The same great work shows that opium was eaten and drunk in India to an excessive degree by many people in this sixteenth century, and that the habit of giving it to children till they were three years old already prevailed in some places.

3. These notices are enough to show that the production and use and abuse of opium in India and the export trade of opium from India to the East are matters of ancient

* It is interesting to observe that the shipload of opium sent to China was sold there at a heavy loss, because, with other reasons, of the "immense quantities" of opium brought before its arrival to Macao by Portuguese ships. This no doubt was Malwa opium.

history, and facts which were established long before European traders or European powers appeared in the East. It may be added that the great antiquity of the use of opium as a stimulant as well as a medicine, or soothing drug, is a common matter of belief in India.

*(b.) Production of Opium in India and Export Trade in Opium towards China and other Countries to the East in times subsequent to the first appearance of the European Nations.*

4. The Mogul Empire in India may be said to have been established in the middle of the sixteenth century. Before that time the cultivation, production, and sale of opium appear to have been free throughout India like that of any other crop, as was the case in Hindu States when we first came to India, and as is still the case in the Hindu States of Rajputana and Central India, and in Nepal and elsewhere. The Mogul Government, however, established, probably in the time of the Emperor Akbar (1556–1605), for revenue purposes, a State monopoly in the purchase and sale of opium. Such monopolies, though very contrary to our ideas of political economy, are an old way of raising revenue in the East. The Dutch Government has long exercised such monopolies in respect to several of the most valuable agricultural products of Java. The Spaniards, till lately, made Manilla tobacco a State monopoly. The Amir of Afghanistan has lately tried to establish one in respect to fruit exported from Afghanistan to India. The fact that the Mogul Government made opium a monopoly, as well as salt and saltpetre, shows what an important item of commerce it then was. Whether the Mogul monopoly of opium extended to all provinces of India ruled by Mogul Governors, or only to those in which opium was a staple crop and important article of commerce is not clear; but the latter view seems most probable.

5. The Mogul State monopoly of opium was farmed out to contractors for large districts or provinces. The cultivation remained free, but the growers could sell only to the State contractors, who manufactured the crude opium and sold it to merchants for the export trade beyond seas, or to retail dealers for internal consumption.

6. From this point I think it will be convenient to deal separately with the history of the trade in Bengal opium and the history of the trade in Malwa opium. I shall deal mainly with the export trade beyond seas, and shall not refer to Excise Regulations on internal consumption, unless they have some bearing on the other subject.

*Bengal Opium.*

7. The European merchants first established themselves on the west coast of India; on the bay of Bengal the European nations seem to have begun to have trading stations or factories in the sixteenth century; the Portuguese in the beginning, the other nations at the end, or early in the seventeenth. Thus, in 1624 we find that the English had established a factory on the site of an old Portuguese one in Orissa, and four years before this, we have an English factor writing from Patna.

8. Throughout the seventeenth century till near the end the Mogul Government was more or less strong and vigorous. At this time among European merchants the Dutch were the chief purchasers of Bengal opium for export, but the French, English, and Danes followed. The East India Company's first express order to its factors to invest in opium is of the year 1683. It is not possible to say what the total amount of Bengal opium, exported by Native and European merchants, then was, but relatively to the trade of those days in other articles of export it was evidently very considerable and important.

9. In the early part of the eighteenth century the Mogul Government had lost its vigour, and the Mogul State monopoly in opium had fallen into disuse in Bengal and Behar, and probably in most outlying provinces, if not everywhere. At this time in Bengal, Behar, and adjoining tracts, not only the cultivation but also the trade in opium was free from State control, but the business of purchasing it from the cultivators and manufacturing it for sale to the merchants who exported it by sea was almost entirely in the hands of a body of native merchants at Patna, which was the chief mart for the export trade in Bengal opium. These Patna merchants made advances to the cultivators and bought their crop; they also bought opium from other

smaller manufacturers living in the country districts. No doubt they also bought up opium coming from Nepal, Oudh, and other parts of the interior. From these Patna manufacturers and wholesale dealers the European trading companies and other exporting merchants drew their supplies. The Dutch Company still had most of the trade at this time. But the export trade does not seem to have been confined to the European companies: Captain Hamilton, writing in 1727, mentions that from 500 to 1,000 chests of Bengal opium went annually to Calicut alone for sale in the interior of Southern India.

10. The trade seems to have gone on very well in this way in spite of the increasing weakness of the Mogul Government till the confusion began which ended in the quarrels of Nawab Suraj-ud-Daula with the European companies, and his triumph over them in 1756. This for the time ruined the trade, and the cultivation in all this part of India fell off. When, however, in 1765 the British East India Company ceased to be simply a merchant company and acquired by grant from the Mogul Emperor the administration of Bengal and Behar and took the province of Benares (Raja Chet Singh's dominions) under its protection, the cultivation and trade began to revive in those provinces, but the envious competition between the agents of the different European companies and quarrels between the exporting merchants generally and the middlemen who dealt with the cultivators, led again to decline in amount and quality of the opium produced. For this reason, and also probably because he thought that the English, as now practically rulers of the country, ought to get the lion's share of this important trade, Warren Hastings, in 1773, after meeting much opposition in Council on economic grounds, revived in a new form, in favour of the English East India Company's Bengal Government, the old Mogul State monopoly of opium. To conciliate the Dutch, French, and Danes, he had to promise them a certain fixed number of chests of opium annually, at cost price, for their trade.

11. The form of Warren Hastings' monopoly was as follows: It was leased to contractors who had the exclusive right to buy and manufacture all opium grown in the East India Company's provinces, and also to buy and import any they could get from foreign territory adjacent, such as Nepal and the dominions of the Nawabs of Oudh. The contractors were bound, on the other hand, to deliver all the opium they could so buy, which was good enough for the export trade, to the East India Company's Governor at Calcutta at a certain fixed price per chest. The inferior opium they were apparently free to sell for local consumption.

12. Warren Hastings' intention seems to have been that the opium so delivered (less that which had to be given to the Dutch, French, and Danes) should be exported to China and elsewhere for the East India Company as a commercial venture like the opium its factors bought formerly used to be. But two years later, in 1775, it was decided by the Government at Calcutta, and accepted by the Directors in England, that the monopoly like the old Mogul monopoly was a revenue measure, and that all the opium delivered at Calcutta, excepting that transferred to the foreign companies, must be sold at auction for export only.* Under this rule, merchants of all nations bid—from Hindu, Jew, and Armenian to English and other Europeans—and no questions were asked as to destination. In 1782, Warren Hastings, in contravention of this decision, sent cargoes of opium for sale on account of Government to the Straits of Malacca and China. This action of his was attacked as insubordinate and discreditable and tainted with motives of favouring his friends, and formed an article of his impeachment in 1786. It was soon found that the contract monopoly system worked no better for Government, and even worse for the cultivators, than the former free trade system had done. It had been stipulated with the contractors that the cultivators should be absolutely free to cultivate or not, and that the contractors should give them a fair price such as they got when the trade was free. But the contractors having to pay heavily for their monopolies of purchase at the auction biddings for the monopoly were driven to screw down the prices they gave to the cultivators and to cheat them in payments. The cultivators responded by adulterating; by selling to

* *Note.*—I under-stand that the monopoly proposed by Warren Hastings was opposed by some members of his Council on 2 grounds: (1) because State monopolies are always economically bad for the industries to which they are applied and for industry in general, (2) because though it may be politically justifiable for a Government to create a State monopoly for the purpose of raising a public revenue, it would be tyranny for the East India Company to use its power as a Government to monopolise an old industry for its profit as a trading company. The first objection was over-ruled, but the second was accepted.

smugglers, or by abandoning the cultivation, so that the amount of opium which reached the Bengal Government grew less and less, and constant friction and disputes occurred between all parties concerned. In 1786 Lord Cornwallis became Governor General and soon came to the conclusion that for the benefit of the revenue, the people, and the trade, the purchasing and manufacturing contractors must be got rid of and a special agency paid by the State be substituted to do their work. There was evidently only a choice between this measure and that of reverting to the free trade in opium which had prevailed for some time before 1773. Free trade would have meant a considerable loss of revenue and the flooding of the country with cheap opium. Lord Cornwallis' decision was brought into effect in 1797: the monopoly therefore dates from 1773, but the direct State-agency monopoly as now existing only from 1797.

13. In 1797, and again in 1799, laws were passed to regulate the new system. These laws, among other things, prohibited any person from bringing opium into the Calcutta Government's dominion from Oudh or other foreign territory, except on behalf of that Government, and also prohibited cultivation except under license from the opium agents. The object of the latter new and important but arbitrary provision was to concentrate the cultivation into districts where the quality was best and where the cultivation could be carefully watched and the whole produce secured for Government. Under this provision, in 1797, cultivation was prohibited in the province of Bengal Proper by refusal to grant licenses. The cultivators of Bengal, however, resisted stoutly, and as the Government was not then very strong, a struggle went on between them and Government for many years, illicit cultivation being largely practised at a great profit in spite of prosecutions and punishments. Soon after this in 1801 we acquired the Doab and Rohilkhand from the Nawab of Oudh, and in 1803 the rest of the North-Western Provinces and the Delhi territory from the Delhi Emperor, or rather from the Marathas: and as soon as we had a firm hold and could organise the administration of these countries, we extended our Bengal monopoly system, prohibiting cultivation of the poppy in most places and allowing it elsewhere by license only and for exclusive sale of the produce to our Opium Agents. We thus got the poppy cultivation of all Northern India, except the Punjab and a few Native States, and the Bengal coast export trade in opium, entirely in our grasp. Oudh and Nepal and Assam opium (in all which countries free cultivation and free trade prevailed) could only enter our territories by coming into the hands of our Government, and could only reach the sea in the same way or by most circuitous routes through the mountains into Burma. It may be noted that we tried to extend our monopoly to the opium of Oudh, but "so attached were the people to their free use of, and trade in, the drug that it was found impracticable" till long after when the province was annexed. The policy of those who directed the Bengal monopoly at this time was not to get a large supply which would sell cheap, but a small supply of high quality which would sell dear. With this object, while in the country generally we restricted or entirely prohibited cultivation, we extended it in a few selected places. The Calcutta auction prices obtained per chest in these days, 1801 to 1818, by this policy were very high, on an average nearly Rs. 2,000 per chest at a time when we paid the cultivator for the 133 lbs. in a chest not more than one rupee per lb. The system then in fact amounted to a great restriction of what would have been the natural bulk of the export trade if the cultivation and trade in Northern India had been left free, and an enormous duty on what was permitted. Throughout this period of 1801–18 the Bengal Government regarded with much jealousy the export trade in Malwa opium from the north-west coast of India. It 1805 it had annexed the whole of what is now the Madras Presidency, and had so got the whole eastern coast and part of the south-west coast into its grasp, but the north-west coast was still open. At last in 1818 the third Maratha war gave us the whole of what is now the Bombay Presidency, Sindh excepted, and a Protectorate over Rajputana, Central India, and the Nagpur territories. It also gave us for the first time the command of the whole Bombay coast, Sindh excepted. The Bengal Government immediately took measures to put an end to the competition of the Malwa opium in the export trade, and for a very short time partly succeeded in establishing a monopoly of the Malwa opium as will be described presently under the head of the Malwa trade. The result as regards the Bengal trade for the moment of the attempt seems to have been to raise the price of Indian opium per chest at the Calcutta auction sales of 1820–21 and 1821–22 to the enormous figure of four thousand and three thousand rupees per chest. These prices are a good indication of the extraordinary keeness of the demand for Indian opium in China at this period.

14. It may be mentioned here that most of the districts now forming the Central Provinces, though then under our political control, were not annexed till 1854, and free poppy cultivation was not stopped in them till some time after annexation. The opium was used locally, and part of it no doubt went to Hyderabad and Madras districts and part towards Bombay as Malwa opium.

15. After it was evident that the attempt to monopolise and restrict the Malwa trade could not succeed, a change of policy in Bengal monopoly management began to be contemplated by the Bengal Government in view of the certainty that the competition of Malwa and Persian opium must in the end bring down the high Calcutta prices greatly. Another reason for expecting increased competition was the great increase of trade in Eastern Seas which was foreseen as soon as the Napoleonic wars ended. The new policy which began to find favour under these circumstances was that of a larger but cheaper supply of Bengal opium to the Calcutta market. From time to time cultivation was extended or permitted in formerly prohibited districts for this purpose. Assam was annexed from Burma after the first Burmese war in 1826: it had been conquered from its native Raja by the Burmese only some 20 years before, and the free cultivation and consumption of opium which had existed had not been interfered with by the Burmese. When we, in accordance with our policy, began after a time to prohibit poppy cultivation in Assam, it led to riots, in one of which the people killed an English district officer.* After our conquests in the south of India in 1805 and the formation of what is now the Madras Presidency, we contented ourselves with preventing export by sea and for a long time left the local consumption which was insignificant, except in the four northern districts, untaxed. The supply came partly from some very small local production, but was chiefly Malwa opium imported through Hyderabad territory. In 1879, however, we succeeded by treaty in stopping the import through Hyderabad, and we then extinguished poppy cultivation in those Madras districts where it had existed. We even seized the opportunity to do the same in the great Native State of Mysore, the management of which had been in our hands since 1805; and when we gave up that management, we made it a condition that this prohibition should continue. By the same expedient we extinguished the cultivation in Kuch Behar. The Punjab was annexed in 1849. There we found the cultivation of the poppy free and general in hills and plains but nowhere large; opium was made in only a few districts; in the rest the patches of poppy were grown for the heads, a decoction of which was popular as a beverage among the Sikhs. Opium was also imported from Rajputana and Kashmir and other Native States in the Himalayas subject to small duties like all articles of import were in those days. The Sikhs had fought hard, and we were inclined to pay much respect to their wishes. For this and other reasons the Bengal monopoly system was not extended to the Punjab. Export of opium from the Punjab to any part of British India remained prohibited as before, but cultivation and import from the Himalayan Native States and Rajputana was allowed for local consumption which was taxed by a special system of excise.

16. The general policy, therefore, of the Government of India in directing its Bengal monopoly was to, as far as possible, stop by treaty the cultivation in Native States and to stop it entirely in British territory, except in a few districts where it could be closely supervised by its opium agents, to pay the cultivators only a moderately remunerative price, and to sell the opium, part at a high price for home consumption, and the rest at the highest possible price for export beyond seas.

### *Malwa Opium.*

17. As I have already shown the export trade in opium from the Bombay coast towards countries to the east of India is a very ancient and important one. The poppy till we interfered was freely cultivated in suitable localites all over the country which is now the Bombay Presidency, the States of Rajputana, and Central India, the Hyderabad territories, and the Central Provinces, but in most places opium was produced to a small extent and for local consumption only. But in the Mogul *suba*, or province of Malwa, which is now included in Central India, and in a large part of Rajputana and a small part of the Central Provinces, the soil and climate were specially favourable, and it was from these inland tracts that the opium for export

* The prohibition of poppy cultivation caused much discontent, but the riots occurred a year later and seem to have been partly and perhaps principally due to a rumour that a new tax was going to be imposed on the peasants of Assam in connexion with the income tax.

mainly came to the sea coast. No doubt it paid transit duty to a considerable extent before it reached the coast, as in those days such duties were levied on all articles of commerce in every State or petty Government which they had to pass through. Whether the Mogul Government ever established any kind of State monopoly of opium in any part of these countries is not, I believe, known. In all probability it did not, as most of them were never under its direct management for any length of time.

18. The Portuguese began to establish themselves on the west coast of India, at the very commencement of the sixteenth century, and were followed by the Dutch, English, and French. The English were a hundred years after the Portuguese; their first factory was established at Surat in 1613. The merchants of all these European nations, except the French, whose settlements were too far to the south, took part in the export trade in Malwa opium as well as in other products. Malwa opium was an important article of the Portuguese and Dutch trade before the English appeared in India. One of the earliest travellers to the court of the Great Mogul at Agra in the early part of the seventeenth century found the Dutch factors at Burhanpur employed in bartering pepper for Malwa opium.

19. The English East India Company expelled the Dutch from Surat and gradually assumed a commanding political position on this coast as the Mogul Empire decayed and the Maratha Princes became the ruling power in the interior, but till the beginning of the nineteenth century the Company had no territorial possessions on the Bombay side, except a few sea-ports with some villages attached. The rest of the Bombay coast opposite the inland opium-producing districts was in the hands of Native rulers, and the Portuguese had trading stations on it. The English merchants could therefore share in the Malwa opium trade, but neither they nor the English East India Company could monopolise or regulate it. As a matter of fact the English merchants seem for a long time to have neglected the Malwa opium trade which was in the hands of the Portuguese,* the Parsis, and the Native merchants of Ahmedabad.

20. By the end of the eighteenth century the East India Company's supreme government at Calcutta had fully established the Bengal opium monopoly, and began to regard with great jealousy and apprehension, as I have said before, the trade from the Bombay coast in Malwa opium as sure to eventually lower the higher price which they were getting for their Bengal opium from the merchants who bought it at Calcutta and exported it beyond seas. Accordingly in 1803 they prohibited for this reason the export of Malwa opium from their Bombay ports, and when in 1805 we acquired some territory and the protectorate over some Native States on the Bombay coast, they called on the Bombay Government to prohibit poppy cultivation and the transit of Malwa opium.

21. The Bombay Government objected to stop cultivation in their territories, and the Directors in England took their view that the opium produced in these particular territories was almost entirely for local consumption and ought not to be prohibited. In 1818 the third Maratha war at last gave us possession of all the Bombay coast districts, except Sindh, and the protectorate over the States of Rajputana, Central India, and Nagpur. This enabled the Government of India to shut out Malwa opium from all the sea coast except Sind, to reach which the opium had to take very difficult and circuitous routes, and to pay transit dues to many Native States. The Bombay Government then in 1820 entered into treaties with Baroda and most of the Native States under its control with a view to check cultivation of poppy in their territories and the smuggling of Malwa opium through them. These States were very subservient at the time and generally agreed. Not, however, content with this, the Government of India began at once to attempt to buy up a certain amount of Malwa opium in Central India and Rajputana, and so monopolise the Malwa opium export trade: this failed, as the Government would not give the high prices demanded, and the opium had still an open, though very circuitous, route to the sea through Rajputana and Sindh, so in 1825 the Government of India began to negotiate with the Native States of Central India and Rajputana with a view to get the Malwa opium produced in them completely into its hands. It had no power to prohibit the cultivation of the poppy in Native States, nor would it have been possible to negotiate for simple prohibition with States in

* The Portuguese established their trading station of Macao in China in the year 1537, just a hundred years before English trade with China commenced.

which the poppy was a staple crop and the export trade in opium an old established and important one as was the case in most of the Central India and Rajputana States, but it tried to induce these States to limit and somewhat reduce the poppy cultivation of their subjects and to grant it a monopoly of purchase from the cultivators of all the opium produced except the amount required for home consumption in each State. We had great influence with most of these States at the moment as we had just broken the military power of the strong ones, and released the weaker from complete bondage. We had also relieved the country from the terrible depredations of the Pindari hordes, which had reduced the people to great misery, and entirely depopulated many localities. Consequently, in 1824–26, ten States under great pressure accepted the proposed treaties, but some very important ones refused. While this arrangement lasted, the opium collected by our agents in these States was sent by the English opium agents mostly to Bombay, but partly to Calcutta, for export: part also was used to supply the demand for excise opium in the Bombay Presidency. It was soon found that the arrangement worked very badly: the people stoutly asserted their right to cultivate as much as they liked, and detested the monopoly as preventing their getting the full competitive value of their produce. The smuggling export trade became rampant and fierce, conflicts between armed smugglers and opium-seizers were frequent, both the Rajas and the people hated our interference; only a small part of the opium produced came into our opium agents' hands: the rest with the produce of States which had not accepted the treaties found its way to the sea through Sindh or to the Portuguese ports, or was smuggled into British territory. So in 1830 the treaties were cancelled and the monopoly given up, and the transit duty system substituted. By this system transit through British territory to Bombay ports was allowed by certain routes on payment of a transit duty. This transit duty had to be fixed low, at from Rs. 125 to 175 per chest, till by the annexation of Sindh in 1843 and other arrangements Malwa opium was finally cut off from all possible access to the sea except through our territory. Between 1843 and 1860 it was gradually raised to Rs. 600 per chest. Since then it has varied between Rs. 600 and 700 per chest. From 1843 the policy has been to impose as high duty upon exported Malwa opium as possible short of killing the trade. We generally get a considerably lower revenue from the Malwa opium per chest than we do from the Bengal monopoly opium, and this has been taken as a justification for keeping the Malwa transit duty as high as possible, but the Malwa opium before it reaches the hands of the merchants at the sea-ports has to bear burdens from which the Bengal opium is exempt. The rulers of the Native States in which it is grown tax it by high rates of land revenue and in other ways, and when it passes through the territory of other Native States, either before or after getting a pass from our agents, it has to pay a pass duty to such Native States: the local merchants who make advances to the cultivators, buy and manufacture, and sell to the sea-port merchants, have to secure a good profit to make their trade pay. The cultivators also owing to competition among buyers generally secure rather higher prices than the Bengal opium agents pay to their cultivators, but without such higher prices they would not be able to pay the high land revenue and other local charges. In the case of the Bengal opium there are no Rajas or middlemen to intercept profits. The whole possible profit between the cultivator and the sea-port merchant goes to the State as public revenue. On the whole the Malwa opium is taxed as high as it can possibly bear, in fact the high rates of transit duty have often caused heavy losses to the trade and much discouraged the cultivation. The auction sale system at Calcutta automatically adjusts the duty to the state of the foreign market, but the transit duty ordinarily remains fixed, and is often not lowered when in fairness to the trade it ought to be. The fact that the Malwa opium trade has been able to survive under all these burdens and disadvantages is a proof that the industry is one which is peculiarly suited to the country and which the people engaged in it do not know how to replace.

22. To guard against opium being smuggled to the coast for export or into British India for illicit consumption, our Government has in late years made fresh agreements with all the Native States under the Bombay Government and with Baroda and Hyderabad. Baroda is allowed to grow and export opium by sea on condition of managing the excise on internal consumption on our system, and strictly controlling the cultivation and manufacture by a State monopoly. All the other States have agreed to prohibit cultivation, to prevent smuggling, and to only use Malwa opium for their internal consumption, indenting formally for the amounts they require. In some cases it is part of the agreement that they get it free of transit duty, in other

cases they pay a reduced duty. Malwa opium is also in the same way indented for use as excise opium in the Punjab, in Mysore, and some other parts of India.

(*c.*) *Remarks on Statistics of Export of Bengal and Malwa Opium from Calcutta and Bombay respectively, for the Period extending from* 1798–99 *to* 1892–93.

23. The brief separate accounts of the export trade in Bengal and Malwa opium given above will, if referred to, illustrate the review which I am about to attempt of the statistics of it which are available. As I have said above, the Bengal monopoly in its existing form of a State opium agency dealing direct with the cultivators began in 1797–98. Before that there are no statistics, but from next year, 1798–99, we have figures of the number of chests of Bengal opium sold annually in Calcutta for the export trade on behalf of the Government of India. These figures, which of course exclude the chests assigned to the Dutch, French, and Danes, and the opium retained for internal consumption, will be found in the Rev. Dr. Medhurst's table attached to his note which was one of the papers forwarded by Sir John Bowring to Lord Clarendon in his letter dated Hong Kong, January 8, 1856. The table shows that from 1798–99 to 1820–21 the number of chests of Bengal opium sold at Calcutta did not increase and varied very little. The annual average was about 4,000 chests. It should be remembered that when the direct monopoly was established, the trade and cultivation of the poppy were in an exceptionally depressed condition in Bengal and Behar. In its best days the trade had probably been considerably larger.

24. Before 1821–22 we have no statistics for the export trade in Malwa opium; but as I have explained above, the Government of India in 1820–21 obtained by treaty a monopoly of purchase of opium in some of the Native States producing Malwa opium, and sent most of the opium so procured to be sold by auction at Bombay. This monopoly of Malwa opium lasted till 1829–30. From 1821–22 to 1830–31, therefore, the product of both monopolies come into the account given in Dr. Medhurst's table, but in looking at his figures for the Malwa trade for these years, which vary from something under 4,000 to something over 8,000 chests annually, two things should be remembered, of which the Rev. Dr. Medhurst writing in China was naturally ignorant: first, that those figures do not show anything like the whole bulk of the Malwa export trade, because our monopoly was for a part only of the country exporting Malwa opium and was for that part exceedingly ineffectual; second, that the export trade in Malwa opium in our hands and out of our hands must have been abnormally small in these years, as in Rajputana, Central India, and the Nagpur country trade and cultivation were only just beginning to recover in 1820–21 from the extreme depression caused by the terrible period of havoc and desolation which was brought to a close by our third Maratha War of 1818. In the last three or four years of the period, 1821–22 to 1829–30, the production of Bengal opium began to be increased; it was seen that an effectual monopoly of Malwa opium was impossible, and the policy which I have explained of a larger and cheaper supply of Bengal opium began to be adopted. From 1830–31 to 1834–35 the average sale at Calcutta was about 11,000 chests. For the same years the Malwa opium brought by private merchants to Bombay under the new pass duty system averaged about 9,500 chests. It must be remembered that this was not the whole Malwa export trade; a considerable part still went by Sindh and the Portuguese ports.

25. From 1835–36 the stimulating effect of the abolition of the East India Company's monopoly and of the inauguration of British free trade in China is evident on both the Bengal and Bombay Malwa opium trades; and a reduction of the transit duty to only Rs. 125 per chest seems to have brought almost all the Malwa opium to Bombay. Export of both began to largely increase, and the first China War of 1839–40 had apparently little effect in retarding the increase even for a time. From 1834–36 to 1843–44 the average annual exports of Bengal and Malwa opium were about equal, over 17,000 chests each. In 1843 the annexation of Sindh closed the last door open to Malwa opium for escape from British transit duty, but no immediate increase in the quantities exported from Bombay is visible in consequence. The probability is that the enhanced rates of transit duty imposed in 1843, 1845, and 1847, which raised the duty in the latter year to Rs. 400 per chest, had, as the Government of India no doubt intended, a depressing effect upon the trade. From 1843 we can for the first time say with confidence that, some comparatively trivial smuggling excepted, we have before us in the Calcutta and Bombay figures the whole export trade in Indian opium. The combined trade amounted to 46,000 chests in 1847–48, of which Bengal supplied two-thirds. For the three years 1852–3 to 1854–55, the Bengal export

averaged 47,000, and the Bombay Malwa export 26,000 chests, or 73,000 combined. Dr. Medhurst's table only carries us to the year 1854–55. For the subsequent period, 1855–56 to 1892–93, we get the combined figures from a return of exports of opium furnished by the Government of India in the Department of Finance and Commerce, dated October 1893.

26. This return shows that the marked rise in quantities, which began with free trade in 1835–36 and went on till 1854–55, did not continue after that date. In the next 38 years there was little change: the quantities were about the same for the first 14 years, a little higher for the next 15, and lower again for the last 10 years. This check in the rise in quantities beginning in 1854–55 is attributed by Mr. Baber, one of the best authorities on poppy cultivation in China, to the gradual wide extension of the cultivation commencing about that date from the Western Provinces into the other provinces of China. There are, however, other Indian causes which have also conduced to the check. For example, as regards Malwa opium, the high rates of transit duty, varying from Rs. 600 to Rs. 700 per chest, which have been imposed since 1860 by the Indian Government, must have very materially checked the natural expansion of that cultivation and trade. The expansion or contraction of the cultivation and trade in Bengal opium depend, of course, mainly on the orders of Government; the objections raised in England to the Bengal monopoly and the China opium trade have for the last 40 years had a continuously restrictive effect. It may be added that the prices of other articles of agricultural produce have been rising by leaps and bounds in British India since 1860; and as Government has only raised the fixed price it pays to the cultivator for opium by small degrees and at long intervals, the poppy has often been a much less profitable crop to him than it used to be formerly. The return shows the different countries to which the exporting merchants are supposed to export the opium. Taking the year 1891–92, nearly 71,000 chests seem to have been returned as intended for China, and nearly 17,000 for other countries.

### (*d*) *Trade in Opium from India to China and Production of Opium in China after the European Nations appeared in the Eastern Seas.*

27. Before attempting to draw any conclusions from the above brief history of the production and trade in Indian opium after the European nations came on the scene, it seems necessary to give a rough sketch for the same period of events in China bearing on the question.

28. We find that import duties on opium are entered in the Chinese trade tariffs of the years 1589, 1615, and 1687, and in the Hoppo book of 1753. British trade with China may be said to have begun in 1637.

29. Down to the end of the seventeenth century opium, though classed in the tariffs as a medicine, was doubtless also used more or less in China as a dietetic stimulant. We know from the accounts of European travellers that it was largely so used in the sixteenth and seventeenth centuries in Persia, India, and Java, and it is impossible that it was not more or less so used in China, where decoctions of poppy-heads were so used even before opium was known. According to Dr. Macgowan, there are Chinese records which show that in the end of the thirteenth and middle of the fourteenth centuries Emperors of China thought that intemperance in the use of opium prevailed in China, and tried to repress it. According to Dr. Edkins, a Chinese author writes that "In the Ming dynasty, 1368 to 1644, the pill called golden elixir "came into use and was found to be very deleterious if much was taken." This no doubt refers to a dietetic use of opium pills like that prevalent in India. It is possible that the excessive use of opium was checked; for, till the practice of opium-smoking began, no fresh measures against opium seem to have been taken by the Chinese Government. But in 1620, tobacco was imported into China from the Phillipine Islands by the Spaniards, and the cultivation of the plant and habit of smoking it spread in the next hundred years all over the country, in spite of severe prohibitive edicts issued by the Chinese Government. During the last half of the seventeenth century, the habit of smoking tobacco impregnated with opium had been established in Java, and thence it had spread to Formosa, and by the beginning of the eighteenth century to part of China. From this practice of smoking tobacco diluted with opium the Chinese seem to have quickly invented the habit of smoking opium alone, and the habit proved as uncontrollable in its extension as that of tobacco smoking had been. Poppy cultivation also began to increase about this time, and

became a large crop in the West.* In 1729, the Emperor of China issued a very severe edict against opium-smoking which was followed by others, and from that date the sale of opium in China *for the purpose of smoking* became a criminal offence, though the smoker was not made himself punishable till much later. No edict prohibiting the import of opium was, however, issued, and Indian and other foreign opium continued to be openly imported under the classification of foreign medicine as before, and the duty to be paid on it.† Later on, however, the Canton Mandarins seem to have arbitrarily applied the edict to the import trade when it suited them. Sometimes from fear of the consequences or for better reasons they would treat consignments of opium as opium for smoking and condemn it as contraband: but generally they would pass them in as opium for medicine after demanding a bribe in addition to the duty. In this way the China trade in opium came to be generally regarded as of a dubious character and liable to be treated as contraband, though as a fact the opium was not prepared for smoking, but was the simple crude opium which had always been exported from Calcutta to the Straits, China, and Java, and which was still on the Chinese tariffs and legally admissible. This explains the case of the ship *Argo*, in 1764, and Mr. Fitzhugh's letter of 1782: also the orders of the Directors of the East India Company in that year, saying it was beneath their dignity to themselves engage in a trade of a clandestine character. At this time China seems to have taken less than half of the Bengal opium exported from Calcutta: the rest went to Java and other countries. Probably most of the Malwa opium went to China, as that trade was mainly in Portuguese hands.

30. About 1790 two changes occurred which caused the Emperor of China to take a new departure. The first was that the opium-smoking habit had at last prominently appeared in Pekin and the Imperial Court. The second was that the amount of opium imported was increasing, and the balance of trade having turned, the Chinese statesmen were frightened at the loss of wealth which they thought was involved in the drain of silver. Formerly China had sold more than she bought, silver flowed in and China was very content, but latterly the foreign merchants had found a difficulty in getting enough silver to pay for the Chinese tea and silk; and knowing opium to be in keen demand, they poured it in instead of silver, and much more silver began to flow out of China than to go in. Moved by these reasons the Emperor, in 1796, formally prohibited all import of opium into China.‡ Export of silver was also prohibited about the same time or previously. The East India Company, on the advice of its Canton Supercargoes, at once strictly forbad any of its ships or servants from carrying opium to China, but it continued as heretofore to freely grant to private ships licenses to trade to the Straits and China, and did not attempt to forbid the private shipowners from carrying opium as part of their cargoes.

31. From this year, 1796, the import of opium into China became undeniably a contraband trade, but for a good many years no real change was observable. On all kinds of merchandise, the exaction of more than the authorised dues had always been the common rule with the custom-house Mandarins, and this had been met on the other side by successful smuggling. Now that opium was clearly contraband almost all was passed in, not by evading the Mandarins, but by paying them such fees or charges as they demanded. As they generally exacted more than the authorised dues on all goods, it was difficult to see any distinction between what was regular due and what was bribery. This is, I understand, why Captain Elliott said later on that since 1796 no article had paid its import dues more regularly than opium had. Foreign merchants of all nations, European and Oriental, were all engaged in this contraband opium trade. The British had most of the China trade in all commodities, but no monopoly in opium. Bengal, Malwa, and Persian opium were brought from India and elsewhere by all nations and used in the China trade. No one could do a good trade in China without more or less participating in this opium traffic, partly owing to the keen demand for it, and partly because it was paid for in silver. Some

* NOTE.—Inquiries made recently in Burmah show that it was from about this time and from this part of China that the cultivation of the poppy and the habit of opium-smoking spread so widely among the Shans and other races now tributary to our Province of Burmah.

† NOTE.—Dr. Medhurst says in his note that previous to the year 1767 the opium sent to China principally by the Portuguese did not exceed 200 chests a year, but he gives no authority for this assertion; and it must be a mere guess of his and certainly far below the mark. The trade was in the hands of merchants of many nations and passed into China licitly or illicitly by many ports; no statistics can exist; but from all we know of the importance of the trade in Indian and other opium towards China for 250 years before 1767, and of the number of nations engaged in it, it must have been large.

‡ NOTE.—In this first prohibitory proclamation the loss of silver was clearly referred to as a reason.

English houses tried to give up dealing in opium, but found all their trade going into other hands. The Chinese had to smuggle their silver out to buy the opium which they smuggled in. Legitimate trade could only be carried on with the foreigner by way of barter, as the Chinese were not allowed to pay in silver. Between 1800 and 1820 Chinese high officials at intervals reported to Pekin that the trade in opium went on unchecked and increasing, and recommended stronger measures, and gradually more vigour was shown and some changes were made. Some time before 1820 the Portuguese were made to find it politic to exclude our merchants from Macao, where foreign opium had been till then mostly stored; and in 1820 the Mandarins succeeded in effectually stopping ships being unladen at Whampoa, the port of Canton, if it was found that they had opium in their cargoes. Then began the opium store ship system in ships moored at Lintin by the islands at the mouth of the Canton River. The ships were heavily armed against attack either by pirates or by Chinese war junks; both the ships and opium belonged to men of all nationalities engaged in the trade. Some store ships also visited other ports not open to trade, anchoring at some distance off shore. The landing of the opium from these store ships and passing it through the customs lines with or without bribing the Mandarins was at this time done exclusively by Chinese purchasers or their servants. According to a Chinese author, quoted by Dr. Edkins, local arrangements between the foreign merchants and the Mandarins of Canton from the Viceroy downwards were made about this time, by which a regular scale of charges or bribes was fixed for the admission of opium, but this was not long adhered to. The local Mandarins went on demanding larger and larger "squeezes," perhaps because the high Chinese authorities were more in earnest, and bribe-taking was getting dangerous. This struggle soon gave rise to a system of violent smuggling along the lower part of river between Lintin and Whampoa. Instead of a quiet system of payment by Chinese merchants of bribes to the Mandarins at Whampoa, which in outward appearance differed little from a legitimate trade, the smuggling now took the form of boats manned by armed Chinese desperadoes, regular professional smugglers, who fought the Mandarins' preventive boats, if necessary, and ran the opium on shore by force. The whole body of Mandarins was alarmed by this growing lawlessness and annoyed by the loss of "squeezes." Accordingly, the issue of an Imperial edict was procured against this particular smuggling along the river, and the wording of it is said by Mr. Lay to amount to an indirect recognition of the other quiet contraband trade at Whampoa. In spite of all this conflict and confusion, the opium trade during this period went on regularly and profitably, and largely increased in amount, and so did the production of opium in China. The Blue Books say that in 1830 the cultivation was very extensive in three great provinces. But it was evident that such a state of thing could not last without a crash of some kind which would affect trade in general. The East India Company's Supercargoes at Canton reported to this effect in 1833.

32. We now come to the year 1834, an important epoch in the trade, as the East India Company was then deprived of its China monopoly and the China trade made free to all who chose to embark in it.

33. Lord Napier was sent to Canton as Her Britannic Majesty's Commissioner and Superintendent of Trade by the English Government. That Government had no wish to push or openly defend the opium traffic, but it did not see its way to interfere with it, and it was keenly bent upon improving and enlarging our political and commercial relations with China, upon inaugurating a proper system of diplomatic communications and opening up new ports to trade. It was an unlucky time for a change of agency and for demanding new and closer relations, as the high Mandarins were as arrogant as ever, and were finally losing patience and beginning to make up their minds to try to put an end to the lawless independence of the foreign merchants.* Moreover, the Chinese soon observed that Lord Napier and his successors, Sir G. Robinson and Captain Elliott, had not the authority over British free traders which the East India Company's Supercargoes had over the old merchants by virtue of the monopoly. When the Chinese authorities asked our Commissioners to check the smuggling in the lower river, they only repeated the Supercargoes' old excuse, which was of course all the

* NOTE.—Anti-opium writers do not seem to make sufficient allowance for the want of docility of the foreign merchants. These men found themselves shut out from all ports but one, and there fleeced by a host of corrupt Mandarins. They knew that the Chinese people were willing to trade, and considered that the system of exclusion was kept up by a despotic Government for its own profit or safety, and not for the good of the Chinese people. The smuggling of all kinds of merchandise, therefore, appeared from the first to be justifiable, and the Chinese people, Mandarins excepted, seemed to be of the same opinion.

more true, because all nations were concerned, that they had no official knowledge of it and no power over it. For these reasons in 1834-36 our Commissioners were ignored and insulted and their requests refused, and the British merchants at Canton were treated very roughly and intimidated. In reply, British frigates forced their way up the river to Canton to protect the factories. In spite of this state of confusion and hostility there was between 1834–38 a great increase of trade in opium and all other articles, owing to the activity and enterprise of the British free traders and the cessation of the degree of restriction and restraint which had been imposed by the East India Company's Supercargoes. It was in these years that European desperadoes and boats owned by Europeans began to be associated with the Chinese desperadoes in the violent smuggling along the river. The Chinese began to see that the situation was intolerable, and that they must either give way or risk war with the Europeans. In 1837 the import of opium was for a time actually legalised by the Chinese Government, but was soon after again stringently prohibited by Imperial decree. This meant that the courageous and conservative members of the Council at Pekin had again got the upper hand, and they showed this in 1838 by beginning to take the strongest measures: the opium trade was entirely stopped for a time and an interdiction of all trade was threatened. In 1839 Lin was sent to Canton as Viceroy on purpose to put an end to the opium traffic, and generally teach the English in particular a lesson of humility and obedience. He seized Captain Elliott and the Canton merchants and compelled the surrender of all the opium in the store ships. When after this Captain Elliott and the merchants on release retired to Macao, he turned them out, and they took refuge on Hong-Kong Island. Lin then cut off supplies from Hong-Kong and we retorted by blockading the Canton River for a time. Captain Elliott then made to Lin detailed proposals for the complete abandonment of the opium trade by British subjects, but by this time Lin was too exasperated and too triumphant to listen to any proposals. He replied by declaring all trade with us at an end and by ordering war junks to attack our vessels. In fact, he practically declared war in December 1839, and we followed suit in 1840. Lord Palmerston's instructions for peace negotiations issued in 1841 admitted the full right of the Chinese Government to prohibit the import of opium, but advised legalisation of the trade on the ground that effectual prohibition was impossible even if the British Government did all it could to help, as we could not establish a preventive service for China, and if we stopped making Bengal opium in India we could not stop export of Malwa opium or the trade in Persian and Turkish opium.* The war closed with the signing of the treaty of Nankin in August 1842. During the war the opium trade revived and went on as briskly as ever, though in 1840 a statutory edict had been issued making opium-smoking a crime punishable with death. At the end of it we made the Chinese Government compensate the merchants for the opium destroyed by Lin in 1839, though before war broke out we had claimed no compensation on that account.

34. We drifted into this war because there were no proper diplomatic relations and because both Governments were simultaneously demanding from the other reforms and concessions which were difficult and unpalatable. The English Government throughout the negotiations of 1834-39 had no intention of using force to support the opium traffic, and if the Chinese Government had offered to meet the English Government's wishes in other respects, if it would meet theirs in the matter of opium, I think that the Indian opium trade would probably have been sacrificed by Lord Palmerston to prevent war and a stoppage of the English trade; but no offer of mutual concession was made by the Chinese Government, which, not unnaturally, hated us at this time worse than it ever had done, and was determined to hold us at arm's length. The opium smuggling traffic was the principal cause of the war, but the Chinese people and Mandarins were most of them as responsible for the smuggling as the foreign merchants; and if the British Government is held responsible for the conduct of British merchants in the matter, the Chinese Government must be equally so for that of its subjects. A Government which cannot control its own people and officials has, moreover, no right to be arrogant and to refuse to treat other Governments as its equals. Nor has one Government ordinarily any right to demand that another Government

* NOTE.—To show that Lord Palmerston was friendly to the opium smuggling trade, Anti-opium writers often quote an extract from a despatch which he wrote about this time reprimanding a Captain Hope, R.N., for detaining English merchant ships which were cruising off the Chinese coast for the purpose of selling opium to Chinese smugglers. The sentence quoted admits no doubt of the construction put on it, but I presume that Captain Hope's action was clearly illegal, and that Lord Palmerston would have failed, if he had asked the British Parliament to pass a law enabling British men-of-war to seize British ships off coasts of foreign countries if their cargoes contained goods contraband in such countries.

shall establish a preventive service for its benefit. On the other hand, our Government knew that the Chinese Government was weak, and that the demands we were making for open trade and closer intercourse were very unpalatable to it. It may be said that if we were prepared to make these demands and to exert pressure to extort them, we ought to have begun by showing in time a more earnest readiness to make a special case of the opium-smuggling business, and to assist China in securing some real reform of its dangerous and lawless character. I think it would have been right, on moral grounds, to try to do this, but the Chinese Government was then arrogant and ignorant of our strength as well as hostile, and we should have got no concessions from them in return. The difficulty would, moreover, have been very great, as all the European nations were more or less concerned in the trade, and as the merchants and sea captains engaged were determined and unscrupulous, hardly to be restrained except by force strongly and continuously applied. The Chinese traders and sailors were equally bold and rebellious. The Chinese Government could not restrain its subjects, and our representatives could not restrain our own people or the other foreigners. There were faults on both sides, and I think it is not easy to say which Government was most responsible for this miserable war; there is nothing to choose between the conduct of the people engaged in the traffic, whether Chinese or Europeans.* In the Treaty and Tariff Negotiations of 1842 which followed the war, the Chinese Government did not ask our Government to prohibit its subjects from impor ing opium, and we did not press them to legalise the traffic: it was left a trade not in any way recognised in the tariff, and still contraband in virtue of the old prohibitive edicts which were not withdrawn. We had acquired Hong-Kong Island by the war, and that became the place for storing opium, and from which Chinese smugglers took it and other goods into China. Some European ships also took opium into the open ports, and others when ordered out of the ports formed depôts on land outside the ports and defended them by armed force and their ship guns. Our representatives invited the Chinese to coerce these people by seizing their ships and goods, but the Chinese authorities did not feel strong enough to do this and asked us to coerce our people. We replied that we had no legal power, and that if we were to try our traders would evade us by registering their ships as American or Portuguese.

35. From 1843 to 1856 the contraband opium trade went on quietly, but the pride of the Chinese people and Mandarins had been exceedingly hurt by the war; they had always disliked Europeans, and now they specially detested the English. The people, though ready to trade, were also always ready to be insolent and violent to Englishmen: a series of outrages and murders occurred.

36. The high Mandarins looked on the continued existence of the opium trade as an outward and visible sign of the defeat and humiliation of their country, and they also still disliked the export of silver which was connected with the traffic: they were more and more unfriendly and slow to give satisfaction when our representatives addressed them, and when by the treaty they were bound to give it. In fact, our relations were excessively strained throughout this period, and at length, in 1857, we drifted into a second war about the seizure of a Chinese boat which had got a license to fly the English flag. The incident had nothing to do with opium, but it seems to have been little better than an excuse for going to war. Our relations were so strained and the position so intolerable that it was felt that force alone could lead to any improvement.

37. In June 1858, this war was terminated on the basis of a draft treaty which contained again no reference to opium, but which conceded to us widely extended diplomatic and commercial relations, and also new privileges of residence and travel in the interior. Of these, some such as those relating to Embassies at Pekin and protection to missionaries and their converts, were excessively unpalatable to the Chinese authorities, infinitely more so than any question about opium. This was apparent when the new tariff came to be drafted, for then the Chinese Commissioners, of their own will and without pressure, agreed to opium being entered in the tariff at an import duty of 30 taels per chest, and the trade being in that way legalised.† America and France

* As to conduct of the war, Anti-opium writers have called it savage on our part, but they omit to mention that in July 1840, soon after it commenced, Governor Lin, by formal proclamation, incited all Chinese subjects to murder or capture British subjects, civil or military, by offering large fixed rewards for each man, according to a scale of rank, brought in dead or alive.

† NOTE.—*See* Mr. Lawrence Oliphant's account, which no one will doubt. He was our Commissioner for settling the tariff, and, coming after Mr. Lay, he not only told the Chinese Commissioner that Lord Elgin did not press for opium to be admitted, but also suggested increase of the duty. The Chinese Commissioner declined both suggestions in the interest of stopping smuggling.

followed by approving this tariff and adopting it for themselves. Lord Elgin, who was a sincere friend to China, was anxious that the import should be legalised and regulated if it could be done with the free consent of the Chinese Government, but he was determined that the Chinese should be entirely free to impose what duties they wished upon it. So he allowed it to be treated very exceptionally, and just as the Chinese Commissioners proposed. The import duty was double that on other articles, and the privilege of commutation of internal or likin duty applicable to other goods was not claimable as regards opium. It could only leave the foreign settlement areas in Chinese hands, and subject to any "likin" duty which might be imposed. Since then, of course, the opium trade has never given rise to any difficulties or complications.

38. The war of 1860, in which the French joined us, was due, on our part, to the Chinese deliberately commencing hostilities in an attempt to resist the enforcement of that part of the treaty of 1858 which provided for our Envoy going to Pekin, and on the French side to secure satisfaction for the murder of a missionary. It was entirely unconnected with the opium question, the settlement of which by the Tariff of 1858 remained undisturbed. Soon after the war of 1860 the Chinese Government was nearly overturned by the Taiping rebellion, and we helped them to put it down, which has made the Chinese Government more friendly to us than before.

39. Since 1860 the enforcement of the provision regarding the residence and protection of missionaries and their converts extorted from the Chinese Government in 1858 has been the chief source of trouble between the Chinese and European Governments. Sir Rutherford Alcock, in 1869, negotiated a revision of the tariff which, among other things, raised the import duty on opium by $2\frac{1}{2}$ per cent., but for various reasons that revision was not approved. Again, in 1876, Sir T. Wade negotiated the Chefoo Convention which proposed, among other things, to bond all opium and make it pay import duty and likin duty consolidated before leaving bond. The Chinese Government was quite satisfied with this Convention, but for various reasons its ratification was long delayed. Again Sir T. Wade's negotiations with the Chinese Government in 1881 showed that the Chinese Government had then practically ceased to wish to prohibit the import of foreign opium, and that their policy was to make it a source of revenue. They clearly stated that the habit of opium-smoking was now so established as to be beyond prohibition, and that if the Indian supply was cut off, opium would be procured elsewhere.

40. In 1885 the additional article to the Chefoo Convention was ratified, by which foreign opium has to pay to the Imperial customs on import to China a consolidated "likin" or internal transit duty of 80 taels per chest in addition to the 30 taels tariff duty. This arrangement, which increased the average aggregate import and likin duty considerably, and which greatly increased the Imperial revenue derived from foreign opium by preventing evasion and embezzlement of the likin duty, can be denounced by either party by 12 months' notice, in which case the provisions of the Tientsin Treaty regarding opium would revive and apply. By those provisions, as already explained above, the import duty is fixed at 30 taels, but this only covers import to the foreign concessions at the open ports, and if the opium leaves those concessions, the Chinese Government can impose any internal pass duties on it it likes, however prohibitive. The only practical checks on the imposition by the Chinese Government of a prohibitive likin duty on foreign opium under the Tientsin Treaty have been the fear of smuggling and the fear of losing the revenue derived from the import and likin duties.

41. It may be added that the Chinese Ministers admitted unreservedly in their Memoranda of 12th March 1883 and of 27th September 1884 that the agreement then under negotiation about opium (which is that contained in the additional article to the Chefoo Convention) was of the Chinese Government's own proposing and included all that they desired.

42. As stated in the first page of this Note, poppy has been cultivated and opium produced in China for many centuries, but extensive production seems to have begun with the habit of opium-smoking and was for long confined to the outlying western and south-western provinces.

43. For the last 50 years it has been gradually spreading into the rest of the provinces, though it has been often sternly repressed in them or in parts of them by zealous Anti-opium officials. According to Mr. H. N. Lay, C.B., there was much cultivation in 16 out of 18 provinces in 1858, and some in every province in 1864. The *précis* of consuls' reports for 1877 to 1881, contained in the Appendices to the

Government of India's despatch to Lord Hartington of 19th December 1881, shows the extensive prevalence of the cultivation in that period, and that edicts were still from time to time being issued against it and were to some extent enforced by a few high Mandarins and neglected entirely by others. The motives for attempting to stop or rather discourage the cultivation at this period seem to have been various, and sometimes connected with considerations of revenue, not of temperance; though some of the leading Chinese statesmen were still strong opium prohibitionists in sentiment, the great majority were becoming convinced that they could neither prohibit cultivation effectually nor tax the native product except very lightly. This conviction disposed them to look more favourably on the foreign drug, on which the taxation was safe, and to discourage the local cultivation though without hoping to eradicate it.

44. Mr. Spence's report of 1892 shows that now south-west China (including Szechuen) alone produces annually at least 224,000 piculs or chests, while 100,000 chests of Indian and Persian is the maximum estimate of foreign opium ever imported into China in one year. In this same part of China, where the production is so enormous, the per-centage to population of consumers is also infinitely greater than in the eastern and maritime provinces where the foreign drug supplemented by the native product is consumed.

(*c*.) *I shall now try to give in Chronological Order the Conclusions which I draw from the above Sketch of the History of the Question.*

45. Anti-opium writers represent the connexion of the East India Company's Government with the Bengal monopoly as a sin for which repentance and atonement to China are due. For the following reasons I hold that this is a false view. The growth of the poppy, the manufacture of Bengal opium, and the export trade from the Bay of Bengal to countries to the east of India were old and important industries when the East India Company's Government of Bengal and Behar revived the Mogul monopoly in 1773–75. That monopoly was a strong measure of taxation, and as was proved by experience, it was repressive in tendency. At that time opium was not contraband in China, and Bengal opium did not go exclusively to that country; on the contrary, the larger part seems to have then gone to Java and other islands. The East India Company's Government might have left the industry free as they found it, but no one then thought of destroying it, nor would such a policy, if practicable, have been fair or right in the interest of the people concerned in the industry.

46. When Lord Cornwallis became Governor-General in 1786, and the abuses connected with the then existing monopoly were brought to his notice, he had practically two alternatives:—

(*a*) to improve the monopoly system for the benefit of the revenue and the cultivators by getting rid of the contractors and employing a direct agency; or

(*b*) to give up the monopoly altogether and revert to the system of free trade which existed before 1773.

I say no other system was then possible, because an export duty at Calcutta would then have driven the trade to other ports. Only a small part of the coast of India was then within our control, and even inside our own territories our hold was not strong enough to check such an easy thing as opium smuggling.

Alternative (*b*) would have meant giving up a large revenue and all effective power of controlling the internal consumption of opium. It would also have ultimately led in all probability to a great increase in the growth of poppy and the export of opium. Such increase has occurred to an immense extent in the case of all other products to which the soil and climate of India are favourable, as peace and order have been established on sea and land, communications been improved, and vexatious imposts abolished. Not only Native, but also European capital, would have been put into the opium business, as has long been the case with indigo, and later with tea, coffee, jute, and tobacco.

Alternative (*a*) brought both cultivation and internal consumption under strict control and taxation, and was the best possible engine, not only for that purpose, but also for levying the highest possible duty on the export trade.

47. At the time when Lord Cornwallis decided on alternative (*a*), the Emperor of China had not issued the edict of 1796, which made the import of opium into China contraband, but if he had known of that edict I do not see that it ought to have effected his decision or the carrying out of the plan which was effected in 1797. The Malwa opium trade was then, I believe, bigger than the Bengal trade, and was not within the

control of the East India Company's Indian Government, and to stop the Bengal export trade which was carried on by merchants of all nations and did not go to China alone would have only benefited the trade in Malwa and Persian opium. Moreover, I consider that the Bengal Government had not, by the monopoly with which it had shackled the industries of growing and manufacturing opium, acquired any right to destroy those industries. It held them in trust for the Indian people under its rule. It could stand aside and free them if it liked but not destroy them I hold, therefore, that Lord Cornwallis was right at the time in adopting the policy he did, and that the East India Company took all the notice they were bound to take of the Emperor of China's edict of 1796, by preventing their own ships and their own servants from carrying opium to China.

48. The Spanish Government had till lately a State monopoly of the manufacture of the best tobacco in the Phillipine Islands, and the merchants who bought of that Government exported large quantities of Manilla cheroots to supply the Indian market. If the Government of India had made the cheroots contraband, who would have expected the Spanish Government to prohibit merchants from exporting them in ships bound for India? Tobacco was first introduced into China from the Phillipines, and the import and use of tobacco were prohibited by the Chinese Government by edicts like those issued against opium, but no one blamed the Spanish Government for not stopping the manufacture of tobacco in the Phillipine Islands, and for not attempting to prescribe to the merchants who bought it that they must not take it to China.

49. Again, Anti-opium writers seem to assume that England is responsible to China for the growth of the opium habit, and owes China an atonement for it. I think there is nothing solid in this argument. It is the opium-smoking habit which has gradually led to the great demand for foreign opium in China, and to the wide extension of the cultivation of the poppy in that country. This habit began at the commencement of the eighteenth century at a time when only a minute portion of the Indian opium export trade was in English hands, and long before the East India Company was in the position of a Government, or had established the Bengal monopoly. By 1729 the habit had become common enough to move the Chinese Government to prohibit the sale of opium prepared for smoking by edict. This edict was not obeyed any better than the previous edicts against smoking tobacco: nor were subsequent edicts prohibiting poppy cultivation obeyed. The Chinese people are not docile to their Government in such matters, nor are all such edicts of Asiatic rulers meant to be vigorously enforced. The Emperor of China is head of the Church as well as of the State, and the distinction between religious injunctions and penal enactments is not clearly defined. When, again, the Chinese Government prohibited the import of foreign opium in 1796, it was moved at least as much by the wish to stop export of silver as by the wish to keep out opium. Without that additional motive it is not likely that it would have acted otherwise than feebly and intermittently either against the cultivation in China or the foreign import. I think it certain therefore that if in 1796 the East India Company's Government had stopped export of Bengal opium to China, the opium-smoking habit would have nevertheless gone on increasing in China just the same. The cultivation in China would have increased, and Persia and Turkey and Western India would have sent more opium to China to meet the demand.

50. It is sometimes assumed that the China opium trade question is one for which the Government of India is separately responsible. But in 1783, 1810, and 1830-32, Committees of the British Parliament had the Bengal monopoly and the trade in opium to China before them and did not interfere with the policy pursued by the East India Company's Government. In 1830–32 they may be said to have distinctly approved and confirmed it. In 1834 the English Government took over all control of the China trade: this was before the East India Company's Government had got full control of the Malwa trade. It cannot be alleged that the English Government is not as responsible for the China opium trade as the Government of India.

51. It has been argued by Anti-opium writers that the war between England and China in 1839-40 was a war waged by England to support and maintain the trade in Indian opium, that the responsibility or guilt of that war is entirely on England and the English people, who are consequently bound to perform some great act of expiation. I hold that the Chinese Government was thinking of keeping us at arm's length, and of stopping export of silver quite as much as of opium. I also hold that the English Government in its action before and during the war was thinking much of English trade in general and very little of the trade in Indian opium; that the Government of China and the Chinese people cannot be absolved from a large share in the responsibility

for the war: and that if the English Government had, in 1839, without regard to Indian interests, done its best to stop Indian opium from being carried to China, it is almost certain that war would have occurred very soon on some other account, and very unlikely that the diminished supply of Indian opium would have led to the extinction of the opium-smoking habit in China though it might for a time have reduced it. Though, therefore, far from thinking that the English Government and opium merchants of all nationalities were free from blame for the first war with China, I think that the idea of a debt of expiation still due to China on account of that war is an exaggeration.

52. Till 1819-20 the East India Company's Government of India had no power to check the export to China of Malwa opium, and it did not get complete power of control of this trade till Sindh was annexed in 1843. When it did get the power it would have been essentially unfair and contrary to all the principles which the Government of India professed in political and commercial dealings with the Native States if it had used the power to destroy a trade and industry so important to the poppy-growing Native States of Central India and Rajputana. The Government of India thought, it fair however, to use its power to tax the export trade in opium of these States, so far as possible to the same extent to which it taxed the opium grown in British India and exported from Calcutta. This was contrary to its ordinary free trade principles: whether it was done merely for revenue motives does not affect the question, for the result on the Malwa trade must have been repressive, and from an Anti-opium point of view the action taken cannot be called immoral, except by people who assert that it was the moral duty of England to forcibly extinguish the whole opium export trade of India whenever it got the power. I hold that it would have been unfair to the people of British India to extinguish the Bengal opium trade, and that to destroy the Malwa opium trade would have been distinctly tyrannical in the case of Native States in which the industry was old and important, like the Central India and Rajputana States. I think myself that in their case we have taken an unfair advantage of our control of the sea coast, and have levied higher transit duties on Malwa opium than ought to have been imposed. That has always been the opinion of the States concerned. It has been argued that if England had not gone to war with China in 1839, China would have stopped the import of all foreign opium, and that therefore since then the Malwa opium trade owes its existence to our power. I do not believe this is true. I believe that even if we had forbidden all British ships to carry Malwa opium to China, the merchants of the Native States and the Portuguese and other nations (so long as we did not prevent export) would have carried the Malwa opium and Persian opium to the China coast, and with the aid of Chinese smugglers would have successfully carried on the trade.* The Chinese Government never had sufficient control over its own smugglers or its own officials to stop the import.

53. The accounts given by Lord Elgin and Mr. Lawrence Oliphant, and the evidence of Mr. H. N. Lay, C.B., prove that the Chinese Government deliberately and without any diplomatic pressure legalised the import of opium in 1858, having come to the conclusion that it was the best policy open to them. All the special charges and restrictions on the import of opium which the Chinese Government proposed were accepted, including the right to levy internal taxes to any extent directly the opium left the foreign settlement areas. Sir T. Wade's evidence as to his negotiations in 1876 and 1881 show that the Chinese Government had then practically ceased to wish to stop the import of foreign opium and was only considering how to make it pay higher duties. By the Chefoo Convention of 1885 this object was attained by an agreement unreservedly admitted by the Chinese Ministers to be of their own proposing and to include all that they desired. Since then the Chinese Government has shown no wish to alter this settlement, nor has it since attempted to stop the immense production of opium in China, or to restrict the use of opium except by taxing it. The above facts are undeniable, but Anti-opium writers assert that the Chinese Government was practically driven into the policy of legalising import of opium in 1858 against its will and conscience by the conviction that if it attempted to put down the contraband or smuggling trade by strong measures it would in some way be baffled by our interference and would run the risk of drifting into war again. They also argue that it was our duty to stop the smuggling trade by stopping the Indian export of opium or in some other way. The real fact seems to be that at that period the Chinese Navy was not capable of dealing with the foreign merchant ships which brought opium into Chinese waters. Our representatives had frequently invited the Chinese Government

* *Note.*—There is a family of Hindu merchants in Central India which has acquired the surname of Jahazwalla because in old times their ancestor had a ship of his own in which he sent opium to China.

to take action against such ships when they went into the inner waters, but it did nothing. It is perhaps true that in those days it would have been afraid to do it even if it had had a navy fit for the purpose, but the fact remains that the Chinese Government was powerless to restrain, not only foreign merchant ships on its coasts, but also its own smuggling Chinese merchants and seamen who were in almost every case the persons who took the opium on shore and ran it through the customs lines. It was equally powerless to stop the common and public practise of smoking opium, or the cultivation of the poppy and the manufacture of opium in China. As to the argument that it was our duty to stop the trade, we had no right to stop export of opium from India to the great injury of Indian industries and Indian public revenue to help the Chinese Government to carry out a policy which it could not carry out in its own dominions: all the more when, so far as we could see, the stoppage of export of Indian opium would only have increased the sale of Chinese and Persian opium. Again, we had no law which enabled our ships of war to prevent our merchant ships from carrying opium to the coasts of China, and if we had made such a law, and enforced it, the trade would have simply gone to other flags. Even if the European and American nations had with infinite difficulty combined to legislate on the subject, they would have failed to combine to enforce it, nor had China the right to ask other nations to establish a preventive service on her behalf. The Anti-opium writers make no allowance for the immense difficulties of the case, and for the fact that whatever the central Government of China may have wished, it was not obeyed or supported by its own people. I hold, in short, that the Chinese Government came in 1858 to the conclusion that its own people and the foreign traders were both beyond its control in the matter of the trade in foreign opium, and that it therefore deliberately and reasonably adopted the alternative policy of regulating and taxing the trade and getting a revenue out of it. That policy it has pursued ever since, and the revenue derived is now over two millions sterling. For some years past there has been no sign whatever that the Chinese Government has any wish or intention to revert to a policy of prohibition of import.

54. Considering the magnitude of the interests involved in the Indian opium export trade, and the extreme uncertainty of the advantage to China of stopping it, to move or incite the Government of that country to upset the existing settlement involves a most serious responsibility. Some Anti-opium writers meet all objections of this kind by continuously harping on the word "poison," and by practically comparing the sale of opium to the Chinese to Lin's action in sending arsenic to the Hong-Kong bakers to put into the English bread. There is of course a strong inducement to adopt these tactics in carrying on an Anti-opium campaign in England; for unless the opium habit in China can be put on quite a different plane from, say, the alcohol habit in England, it would be impossible to persuade the mass of the English people to impose heavy losses and liabilities upon themselves or the Natives of India in order to do away with the Indian opium trade, or to deviate in the matter from the general principles which regulate our relations of trade and diplomacy with other nations. But I think the evidence already before us properly weighed sufficiently proves that the two habits stand on the same plane, that alcohol in England does more injury to the body, though not perhaps to mental energy, than opium in China, and that the opium sot in China is less inclined to crime than the alcohol sot in England and less of a nuisance to his family and to society. The great majority of consumers in both cases exercise the habit in moderation and know how far they can indulge with advantage, or at any rate without doing themselves material injury, mental or physical. Of the rest in both cases, a considerable number gradually increase their doses and end by doing themselves decided injury, though of this class only a few, generally of the poor and ill-fed, actually ruin themselves morally or physically. In both cases also, a certain number of viciously inclined or self-indulgent young men plunge in early life into the habit in an irregular way and to excess, and with the aid of other debauchery generally ruin their health, their fortune, and their characters. In either case ordinary men find it difficult to give up the habit when once formed, extremely difficult when it has been carried to excess, and the cessation of the periodic dose appears to produce a somewhat stronger craving in the case of opium than in that of alcohol. In both cases also poor men are apt to spend more money than they can properly afford on the habit, often to the great injury of their families, but opium is actually and comparatively the cheaper luxury of the two, and in comparing the unabstemious people of both races it should be remembered that, as a rule, the Chinaman contents himself with smoking opium, while the Englishman both drinks alcohol and smokes tobacco. On the other hand, many business men and artisans in China, whose constitutions are weakened by

disease, find, particularly in old age, that opium-smoking is a useful stimulant which prolongs their lives and their power of working, and in this way the quasi-medicinal use of the opium pipe seems much oftener advantageous than a similar use of alcohol in England.

55. I think this comparison is a fair one, and that if we take the lay evidence taken by us or submitted to us from the Straits and China Settlements, and add the evidence of the China missionaries, who speak or write in a sober and accurate manner, we shall find that taken together they support the description I have given of the effects of opium-smoking in China. The books of travellers in China and the consular reports also confirm it, and so does even the Anti-opium evidence given in Burma with regard to the effects upon Chinese and Shans in Burma. There is no doubt a class of missionary evidence from China which I venture to reject as evidently exaggerated. It is for the most part the evidence of men who are total abstainers and whose Churches impose total abstinence from alcohol and opium upon their converts as a rule of faith. They find it very difficult to keep their converts in China from backsliding in the matter of opium-smoking, and their relations with their congregations are often poisoned by the deceit and dissensions which are so engendered. They would naturally like State help in the matter. The missionaries also are often biassed by the taunts in the matter of opium which the Chinese commonly address to them. The right of the missionaries to reside, preach, and make converts in the interior has been extorted by force of conquest from the Chinese Government. The Chinese are a proud and patriotic people; the position of the missionary, not subject to Chinese law, and able to protect even his converts against the Chinese Government and people, is a great offence to them. When the missionary tells them that their religion, their philosophy, and their social habits are erroneous, they look about for a retort, and they have found by experience that the taunt about opium is effective, and they use it. They do not use it in speaking to other Englishmen, and there is no evidence that it is seriously in their minds, or that they would be more open to conversion to Christianity or more friendly to foreigners if the import of foreign opium into China was now prohibited. Many of the missionaries, however, have hopes that they would, and are biassed against opium by the hope. Besides all this, we know from experience in India and elsewhere that missionaries as a class are, as Mr. Gladstone said, "not remarkable for "calmness combined with comprehensiveness of view": they are apt to be fervid when they feel that they are on the side of virtue, and in that way run into exaggeration.

56. It may be argued that the evidence we have taken in India is generally strong against the habit of smoking opium, though very seldom hostile to the habit of opium-eating, and that this corroborates the missionary view of the effects of opium-smoking in China. I attach no weight to this argument as we have had no medical evidence in India which shows that opium-smoking is worse than opium-eating. On the contrary, many doctors say that they would expect eating to be most injurious, and in China, Burma, and the Straits, where opium-smoking is common, the general opinion is that eating is more injurious. The fact is, that in India opium-smoking is a new and uncommon habit, and Indians are generally prejudiced against it by its novelty and by its associations with a few public saloons in big cities and cantonments frequented by low and debauched characters only. It is probable that opium-smoking is to some extent more seductive than swallowing opium pills, as it is a gregarious habit, and as the trick of puffing at a pipe becomes itself a kind of pastime, but that is I believe the whole difference.

57. If my description of the effects of opium-smoking in China is anything near the truth, I do not see how it is possible for England to force India to put an end to the export of opium, even if the advantage to China was far less problematical than it is. England, like many other countries, exports alcohol largely free of all duty, whereas India puts on all opium exported to China or elsewhere as heavy a duty as the article will bear. The alcohol exported by England, has, as we all know, done great harm in some countries. England is now, I believe, exporting to China morphia, the abuse of which is doing harm there. The condemnation of the Indian opium traffic proceeds upon an exalted doctrine of Christian morality, which neither England or any other nation practise in their commerce, and which the Indian people would strongly object to be forced to practise to their great loss. If we destroy or damage the Indian opium export trade from motives of Christian sentiment, or from sympathy with the success of Christian missions, or if we are influenced in part by a hope of improving the trade with China in English products, in all these cases England is bound in justice

to make good to the Indian people the whole loss and cost : the people of India do not share these sympathies or these hopes.

58. Nothing that I have written above prevents me from strongly holding the view that the Chinese Government should be left entirely free to deal as it likes with the question of the import of foreign opium, provided that if it wants to alter or annul in respect to opium either the Chefoo Convention or the Treaty of Tientsin, it first consults us in the usual way and hears what advice we have to offer. I consider that no pressure of any kind should be employed to prevent the Chinese Government disregarding our advice and doing what it wishes, provided that it appears to be acting with a serious intention of checking the opium-smoking habit. If it appears that it is acting merely to transfer to itself revenue from the Indian opium which now goes to the Indian Government, then I think we may fairly oppose, so far as peaceful diplomatic means allow. The Chinese Government must be already aware from Sir James Fergusson's speech in Parliament and from the opium Debates in Parliament that there is no risk of England going to war to maintain the opium provisions of any Treaty if China decides to denounce them. I at one time thought that this Commission ought to recommend that a distinct intimation should be made to China as to her freedom of action in the question, but I now think that with reference to the declarations made in our Parliament and the Chinese Ministers' admissions in 1883 and 1885 regarding the Chefoo Convention, such action is clearly unnecessary, and if so, it is unadvisable, as the Chinese are likely to misunderstand it.

59. I think it should be an instruction to the Bengal Opium Department not to license poppy cultivation in any villiage in which there has been no cultivation for the last five years, or in which hereafter all cultivation may be abandoned for a period of five years. I would also again warn the Department not in any way to press cultivators, directly or indirectly, to take advances or to refrain from abandoning the cultivation. In this way the cultivation under the Bengal Opium Agency will be kept from increase and will probably be gradually somewhat reduced. This, I think, is the right policy, as it will tend to keep up the price of Indian opium and to prevent our having to reduce the transit duty on Malwa opium. If, however, prices in China and at Calcutta show that the rate of transit duty on Malwa opium is at any time too high, it should of course be promptly reduced. The Government of India should be left the judge in that matter.

J. B. LYALL.

Bombay, 15th February 1894.

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## APPENDIX B.

## HISTORICAL MEMORANDUM.

By Mr. R. M. DANE, of the India Civil Service.

Introductory. The object of this Memorandum is to supplement the information, contained in Sir James Lyall's Note of 15th February 1894, regarding the history of the production and consumption of opium in India and of the trade in opium in the East, and the policy of the East India Company in regard to opium in the 18th and in the earlier years of the 19th century.

The Memorandum is in three sections.

Section A. contains a collection of references to opium and the opium trade, which occur in works written by European, Chinese, and Indian authors before the establishment of British supremacy in Bengal.

Section B. describes the circumstances, under which the monopoly of the manufacture and internal trade in opium in Bengal was assumed by the East India Company in 1773, and the early policy of the Company in regard to opium.

Section C. gives some account of the measures taken by the Company, subsequent to the assumption of the Bengal monopoly, to regulate and restrict the trade in opium from India, particularly from Central India and the West Coast, and to introduce in India a system of Excise on opium consumed in the country, up to the time of the introduction of the Pass duty system on Malwa opium in 1829–30.

The extracts from Chinese authors in Section A. of the Memorandum have been taken entirely from the valuable Historical Note on opium in China by Dr. Edkins of the

Chinese Customs Service, published in May 1889, which is printed as Appendix II. to the Minutes of Evidence published with the first Report of the Royal Commission, dated 30th December 1893.

Sections B. and C. are based on official documents and records, most of which have been presented to Parliament and are published in the Appendices to the Reports of Select Committees of the House of Commons upon the affairs of the East India Company.

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## Section A.

Opium and its uses were well known to the Greeks at least as early as the first century A.D., and as the Arabic Afyun and the Chinese Yapien are apparently derived from the Greek ὄπιον, it is supposed that a knowledge of the drug was communicated by the Greeks to the Arabs, and that the drug was introduced by the Arabs into China and India.

Historical Note on Opium in China, by Dr. Edkins, of the Chinese Customs Service, published in May 1889.

In China the first discovered reference to the poppy occurs in a work by Chén T'sang Chí, a writer in the reign of T'ang Ming Huang, in the first half of the 8th century. Chén T'sang Chí quotes an earlier author, Sung Yangtzu, as saying: "The poppy "has four petals. It is white and red . . . . Within there are seeds like those "of a millet."

A poem written in the closing years of the T'ang dynasty by Yung Tao, a native of Chéng-tù-fu in Szechwan, shows that the poppy or minang flower was then known in that province.

In 973 A.D., the Emperor Sung Tái-tsu directed the preparation of a medical work, in which the poppy is called ying-tzu-su, and medicinal properties are attributed to the seeds. Su Ché, a poet of the same period, and a native of Western China, in a poem on the cultivation of the poppy refers to a pleasure-producing decoction made from boiled poppy seeds.

In 1057 A.D., Su Sung, and others, compiled under the orders of the Emperor Jén Tsung another medical work, in which the following passage occurs: "The poppy is "found everywhere. Many persons cultivate it as an ornamental flower. There are "two kinds, one with red flowers and another with white, &c." In the same work a drink made from poppy seeds was said to be serviceable in cases of nausea and vomiting.

At the beginning of the 12th century, in the reign of Hui Tsung, one of the Court physicians, writing about the poppy, says, "The seeds are cooling in their nature; if "taken in good quantity they are beneficial for such affections as diarrhœa"; and in the same century Lin Hung, a medical writer in the time of the Sung dynasty, alludes to preparations from meal, the milk from poppy heads, and other ingredients.

Other medical writers in the 12th and 13th centuries refer to the medicinal use of poppy capsules in the treatment of dysentery, diarrhœa, and asthmatic cough, Wang Shih, in the 13th century, describing their effect in the case of dysentery as simply magical. Chu Chén-Héng, another writer in the 13th century, in the time of the Yuan dynasty, and a native of South China, refers to the preparations from the capsule "as killing like a knife."

In the 14th century a brother of the Emperor Ch'héng Tsu mentions the use of the poppy capsule, prepared in vinegar, in the treatment of dysentery.

*Opium, however, is mentioned for the first time, in the 15th century, by Wang Hsi, who died in 1488 A.D. He describes the process of extraction of opium from the poppy capsule, and refers to the use of opium as a medicine.

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In India the earlier Sanscrit writers make no reference to opium, but evidence has been given before the Commission to the effect that opium is mentioned and its uses described in Bhavaprakasha and other Ayur-Vedic medical works supposed to have been written not less than 800 years ago. The history of the production and use of opium in India before the commencement of the 16th century is, however, obscure, but the writings of Europeans who visited the country in the early part of that century, afford abundant evidence to show that opium was then a staple product of the country.

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* Note.—The statement in Sir James Lyall's Note that the preparation of opium is distinctly described by a Chinese writer of the 12th century is not supported by Dr. Edkins' Historical Note.

the opium habit was widely prevalent, and a well-established trade in the drug existed between India and other countries in the East, opium from India and opium from Egypt and Turkey competing with each other for the markets of China and Malacca.

Note by Mr. F. C. Danvers, the Head of the Record Department of the India Office.

In the list of articles sent to Lisbon from India in Cabral's fleet, in 1501 A.D., Vespucci mentions "opium, Indian aloes, and many other drugs too numerous to detail."

The first Letter Book of the East India Company 1600–1619, by Birdwood and Foster, published in 1890, p. 55 of the Introduction.

Copy obtained from Mr. F. C. Danvers.

In a letter in the Archivo Storico Italiano of 1511 A.D., Giovanni da Empoli mentions the capture of "eight Guzzurate ships," laden with "arfiun, for so they call opio thebaico," and other merchandise.

Again, in a letter written by Don Alfonso De Albuquerque to the King of Portugal, from Cananor, on 1st December 1513, the following remarkable passage occurs on the subject of opium: "I also send you a man of Aden, who knows how to work afyam "(opium), and the manner of collecting it. If your Highness would believe me, I would "order poppies of the Açores to be sown in all the fields of Portugal and command "afyam (opium) to be made, which is the best merchandise that obtains in these places, "and by which much money is made; owing to the thrashing which we gave Aden, no "afyam has come to India, and where it once was worth 12 pardoes a faracolla, there "is none to be had at 80. Afyam is nothing else, Senhor, but the milk of the poppy; "from Cayro (*sic*) whence it used to come, none comes now from Aden; therefore, "Senhor, I would have you order them to be sown and cultivated, because a shipload "would be used yearly in India, and the labourers would gain much also, and the "people of India are lost without it, if they do not eat it; and set this fact in order, "for I do not write to your Highness an insignificant thing."

The Coasts of East Africa and Malabar, by Duarte Barbosa (a Portuguese), translated from the Spanish, and edited for the Hakluyt Society by the Hon. H. E. J. Stanley, in 1866.

Duarte Barbosa (1516 A.D.) makes several references to opium and the opium trade in his description of places in India and of countries in the East. Adem (*i.e.* Aden).—"Some ships from Ormuz likewise touch there to trade and also from Cambay whence "they bring much cotton stuff, spices, drugs, jewels, and pearls, alaquequas, spun "cotton, and unspun, and they take from these madder, opium, raisins, copper, "quicksilver, &c."

Duy (*i.e.* Diu).—"They (the Malabars) load at this port for the return voyage, cotton "cloths of the country and silk stuffs, horses, wheat, vegetables, sesame, cotton, oil "of sesame, and opium, both that which comes from Aden and that which is made "in the kingdom of Cambay, which is not so fine as that of Aden."

At Palecate (Coromandel) opium and many Cambay goods are said by Barbosa to fetch a good price; and the prices of Aden and Cambay opium at Calicut, and in the Malabar country, are given in an account of the drugs and spices there obtainable, the price of Aden opium being 25 per cent. higher than that of Cambay. The merchants of Bijanaguer (Vijayanagar in the Deccan) are also said to import "much anfiam which is opium;" and the prevalence of the habit of opium eating in India is referred to in the following passage, which occurs in an account of Sultan Mahomed, King of Cambay:—"As we see by experience with the opium which the Indians eat, "for if they leave off eating it they die immediately, that is if they begin as "children to eat it in such a small quantity that it can do them no harm, for some "length of time, and then increasing the quantity by degrees until they remain "accustomed to it. This anfion is sold in the fourth degree and on account of being so "cold it kills. We call it opio, and the women of India when they wish to kill themselves, in any case of dishonour or of despair, eat it with oil of sesame and so die "sleeping without feeling death."

Peigu.—"Many Moorish ships from different parts assemble at these ports of Peigu, "and bring thither much cloth of Cambay and Palecate, coloured cottons and silks, "which the Indians call patola, which are worth a great deal there; they also bring "opium, copper, . . . . and a few drugs from Cambay."

Ava.—"The merchants bring there for sale quicksilver, vermilion, coral, copper, "saffron, rose water, opium, scarlet cloth, coloured velvet from Mekkah, and many "other things from the kingdom of Cambay."

Ansiam (Siam).—"Opium, Cambay stuffs and all these goods fetch a high price in "this place."

Kingdom and city of Malacca.*—"They (merchants Moorish and Gentile) bring "thither . . . . vermilion, quicksilver, opium and other merchandise and drugs "from Cambay."

* "This city of Malacca," writes Barbosa, "is the richest trading port, and possesses the most valuable "merchandise, and most numerous shipping and extensive traffic that is known in the world."

China.—"They (the Chinese) go with all these goods to Malacca where they also "carry much iron, saltpetre, and many other things, and for the return voyage, they "ship there Sumatra and Malabar pepper of which they use a great deal in China, and "drugs of Cambay, much anfiam which we call opium, wormwood . . . . and "many other things."

Garcia d'Orta, a Portuguese physician, who wrote in 1563 A.D., also refers to the use of opium in India, and mentions the case of the minister of Nizam ul Mulk of Ahmadnagar, a Khorasani, who was in the habit of eating three tolas and a half (630 grains) of opium in the day. Cambay opium was said by d'Orta to be soft and yellowish, while that from Aden was black and hard.

Paper by Dr. da Cunha in the Transactions of the Medical and Physical Society of Bombay, 1882.

John Huighen van Linschoten, a Dutchman, who wrote an account of his voyages, in or about 1596 A.D., refers to the opium and drugs of the Kingdom of Cambay, and gives the following interesting account of the use and effects of opium in India; though his statements as to the effects of opium, like those of Barbosa and other early European writers, were not unnaturally much exaggerated.

Discours of Voyages unto ye Easte and West Indies, printed in London by John Wolfe, printer to the Houble. City of London.

"Amfion, so called by the Portingales, is by the Arabians, Mores (Moors) and Indians called affion, in Latin opio or opium. It cometh out of Cairo in Egypt and out of Aden upon the coast of Arabia, which is the point of the land entering into the Red Sea, sometimes belonging to the Portingales, but most part out of Cambaia and from Deccan; that of Cairo is whitish and is called Mecerii: that of Aden and the places bordering upon the mouth of the Red Sea is blackish and hard; that which cometh from Cambaia and Deccan is softer and reddish. Amfion is made of sleepe balls or poppie and is the gumme which cometh forth of the same, to ye which end it is cut up and opened. The Indians use much to eat amfion, specially the Malabares, and thither it is brought by those of Cambaia and other places in great abundance. He that useth to eate it must eate it daylie, otherwise he dieth and consumeth himself. When they begin to eate it, and are used unto it, they eate, at the least twenty, or thirty grains in weight everie day, some times more; but if for four or five days he chanceth to leave it, he dieth without fail. Likewise he that hath never eaten it and will venture at the first to eat as much as those that daylie use it, it will surely kill him, for I certainely believe it is a kind of poyson. Such as use it goe alwaiss as if they were halfe asleepe. They eat much of it because they would not feel any great labour or unquietness when they are at work, but they use it most for lecherie,.....although such as eate much thereof are in time altogether unable to company with a woman and whollie dried up, for it drieth and whollie cooleth man's nature that useth it, as the Indians themselves doe witness: wherefore it is not much used by the nobilitie but only for the cause aforesaid."

Cæsar Fredericke, a Venetian merchant, who travelled in the East for 18 years, and published an account of his travels in or about 1581 A.D., mentions opium as one of the staple commodities of trade at the ports of Cambay and Chaul, and gives an account of two ventures in opium, which he made himself from these ports to Pegu; the venture from Cambay, in particular, being described at considerable length. "And for, because that at "my departure from Pegu," he writes, "opium was in great request, I went then to "Cambay to employ a good round summe of money in opium, and there I bought 60 "parcels of opium, which cost me 2,000 and 100 duckets, every ducket at 4 shillings "2 pence. . . . . ." and "arriving at S. Tome I had news, through or by the way "of Bengala, that in Pegu opium was very deare, and I knew that in S. Tome there "was no opium but mine to go for Pegu that year, so that I was holden of all the "merchants there to be very rich, &c. &c." However, a ship from Cambay bound for Assi (Acheen) with "great quantity of opium, there to lade pepper" was driven by adverse winds to Pegu the day before he arrived, so that opium, which was "before very deare," fell to a "base price," and Fredericke had to remain for two years in Pegu to dispose of his opium. Notwithstanding this disappointment, he went on his return from Pegu to Chaul, and there laid in another stock of opium, with which he travelled back by way of Cochin to Pegu, where he disposed of it at a good profit. "Once more," he writes, "I lost occasion to make me riche, for whereas I might have brought "good store of opium againe, I brought but a little, being fearefull of my other "voyage before. In this small quantitie I made good profite."

Hakluyt's Voyages, edited by Edmund Goldsmid, F.R.H.S., Vol. IX., Asia, part II.

Fredericke also mentions the fact, that opium was brought to Pegu and Ciriam by ships from Mecca, and that Cambay opium was the only commodity that could profitably be brought from the Indies (*sic*) to Pegu at that time.

Goldsmid's edition of Hakluyt's Voyages, Vol. X., Asia, Part III.

Ralph Fitch, an Englishman, whose travels in the East lasted from 1583 to 1591 A.D., visited Agra, Benares, and Patenaw (Patna), which he describes "as a very long and great towne," where there was a "trade of cotton and cloth of cotton, "much sugar which they carry from hence to Bengala and India, very much opium "and other commodities."

Fitch also visited Burma, and like Fredericke mentions that opium from Cambay and Mecca was in demand in the kingdom of Pegu at the time of his visit. "In India," he writes, "there are few commodities which serve for Pegu except opium of Cambaia "painted cloth of S. Tome or of Masulipatam, and white cloth of Bengala, which is "spent there in great quantity." Again:—"To Cirion, a port of Pegu, come ships "from Mecca with woollen cloth, scarlets, velvets, opium and such like."

Purchas His Pilgrimes in five Bookes, printed at London in 1625.

William Finch, a merchant connected with the London East India Company, who landed at Surat with Captain Hawkins on 28th August 1608, and passed through Malwa in the course of a journey across India from Surat to Agra, refers in his journal to the abundance of opium there produced in the following terms: "This "country is called Malwa, a fertile soile, abounding with opium . . . . I "enquired the price of opium. They give the head three scratches, from whence "issue small teares, at the first white, which with the cold of the night turneth "reddish, which they daily scrape, not without infinite trouble, the head being very "small and yeelding little."

Purchas His Pilgrimes.

Captain Hawkins also, in his account of his adventures in India, refers casually to the existence of the opium habit at Surat in the following passage: "As I was neere "the governor's house, word was brought me that he was not well, but I thinke "rather drunk with affion or opion, being an aged man."

Dr. Edkins' Historical Note on Opium.

Jacobus Bontius, a Dutch physician, writing at Batavia in 1629, says that the nations which use opium seem drowsy, and are dull in commerce and arms, but that the drug is invaluable as a medicine in hot countries, in cases of dysentery, cholera, burning fever, and various bilious affections.

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The Local Muhammadan Dynasties—Gujarat, by Sir E. Clive Bayley, K.C.S.I.

Turning from European to Native sources of information, we find in the account of the Kingdom of Gujarat and its revenues contained in the Mirat-i-Ahmadi, a work compiled by Ali Muhammad Khan, Diwan of Gujarat in the reigns of the Delhi Emperors Muhammad Shah and Alamgir II., (1719 to 1759 A.D.), that the customs and other taxes of the City of Ahmedabad in the time of Sultan Muzaffar and other Gujarat Kings, before the overthrow of the dynasty by Akbar in 1573, A.D. amounted to 15 lakhs and 50,000 rupees, and of this sum Rs. 5,000 were obtained from daribas or stalls for the sale of opium.

Translations of the Ain-i-Akbari, by Gladwin and by Blochmann and Jarrett.

The Ain-i-Akbari or Institutes of Akbar, which forms the third volume of the Akbar Namah, by Shekh Abul Fazl, (1590 A.D.), shows that the poppy was at that time cultivated in the Subahs or Provinces of Agra, Allababad, Oudh, Delhi, Lahore, Multan, and Malwa; and the excellence of the crop in the Province of Malwa is specially noticed. The people of Malwa, according to Abul Fazl, were even then in the habit of giving opium to their children, until they were three years old.

The poppy is not mentioned by Abul Fazl in a description of the agriculture of Behar, though the excellence of the rice and sugar cane there grown is referred to. From Fitch's reference to opium at Patna, however, it seems probable that the poppy was cultivated, and opium produced in Behar in the 16th century, though the cultivation had not at that time come under the notice of the Government.

The fact that the Emperor Akbar was in the habit of taking opium is incidentally referred to by Abul Fazl, and the use of stimulants by the Muhammadan nobles of the time appears to have been very common.

Blochmann's Translation of the Ain i-Akbari.

In the Tuzuk i Jehangiri, a later work, Jalal ad Din Masud, a Muhammadan noble, is said to have eaten opium like cheese, out of the hands of his mother.

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Report on the Miscellaneous Old Records at the India Office, by Sir George Birdwood, M.D K.C.I.E., and LL.D.

The early records of the London East India Company, also show that opium was a recognised product of India when the Company first commenced to trade with the country.

In a list prepared by John Chamberlain for the Company in 1599, opium appears as one of the "Commodities of the Este Indies," imported by Portugal and Holland.

The General Lieutenant and Captains of the fourth voyage commissioned by the London Company in 1606, were instructed to buy good opium, among other things (indigo, cotton yarn, fine calicoes, &c.) as part of the cargo for the return voyage for sale in England; and similar instructions were issued to the officers commanding the ships that took part in the sixth and eighth voyages.

First Letter Book of the East India Company 1600–1619, by Birdwood and Foster.

A letter from Surat, dated 30th August 1609, regarding the prices of goods in India contains the following passage:—"Opium in great abundance, but ther is such great "expence (use) hereof in India that it is worth 80 mamoodies, and somewhiles also "120 m. per maund; heer is a whitish sort of opium brought from Mezer or Cayro "that is worth 16 m. per sere."

A mamoodie is explained to be equal to about 11*d.* sterling.

Thomas Barber, writing from Persia to Sir Thomas Roe in 1618, says:—"We are "informed that the opium growing in these parts is better than that of Indya, whereof "we are determyned to send musters for England the better to knowe yts true worth "and valewe there." Again—"Opium groweth in these partes in greate aboundance, "yet is worth 180 shahees per maen, but we suppose it is much better than yt of "Indya, which is worth there 45 roopees the maen of 40 seres; hereof to send onely "a smale quantetye to experience yts goodness and vend in these partes."

In 1682–83 also, instructions for the purchase of opium for sale in England were issued to the Company's servants in India.

Report on the Miscellaneous Old Records at the India Office, by Sir George Birdwood.

The quantities of opium thus ordered by the Company from India were however inconsiderable, and the opium was purchased for sale in England, and not for export or trade in the countries to the East of India.

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The references to opium by Tavernier, Kaempfer and other travellers in the latter part of the 17th and early part of the 18th centuries are also interesting and important.

Tavernier, in 1676, in a description of the commodities of the dominions of the great Mogul (Aurangzeb) mentions opium as one of the drugs brought to the port of Surat. "Opium," he writes, "is brought from Brampour (Berhampur), a town of good trade "between Agra and Surat. The Hollanders buy great quantities, which they truck "for their pepper."

Collections of Travels through Turkey into Persia and the East Indies: London, 1684.

Christopher Schewitzer, about the same time, refers to the use of opium by the Javanese to promote courage in time of war: "They (the Javanese) he writes fell "upon us like mad dogs in vast numbers, and on all sides. The opium that they "used to take always before they engage had made them stark mad."

Voyage to and through the East Indies, from the year 1675 to 1683, by Christopher Schewitzer: London, 1700.

Kaempfer, the Westphalian, in 1689, saw the Javanese smoking tobacco steeped in opium water, and says that the opium was brought in Dutch ships from Bengal and the Coast of Coromandel.

Kaempfer's Amœnitates Exoticæ, published in 1712.

Francois Valentyn, a Dutchman who wrote in 1726, says that the Javanese are Madat-smokers and opium eaters, and that "Java alone consumes monthly 350 pack-"ages each of 136 cattis, though the East India Company (*i.e.* the Dutch East India "Company) counts them as 145 cattis."

Old and New East Indies, published at Amsterdam in 1726. Vol. IV.

Captain Alexander Hamilton, an Englishman who published an account of his travels in the East in 1727, says:—"Patana (Patna) is the next town frequented by "Europeans, where the English and Dutch have factories for saltpetre and raw silk. "It produces also so much opium that it serves all the countries in India with that "commodity."

In another passage he speaks of opium, the property of other merchants, being conveyed in the English East India Company's fleet from Patna to Fort William, Calcutta, with the Company's saltpetre, piece goods and silk.

Hughli however, was the furthest point up the Ganges reached by Hamilton in person, and his account of Patna was based on the reports of others. As regards Hughli he writes:—"This town of Hughli drives a great trade. . . . To mention all the "particular species of goods that this rich country produces is far beyond my skill; "but in our East India Company's sales all the sorts that are sent hence to Europe "may be found; but ophium, long pepper and ginger, are commodities that the trading "shipping in India deals in, besides tobacco, and many sorts of piece goods that "are not merchantable in Europe."

A new Account of the East Indies, being the Observations and Remarks of Capt. Alexander Hamilton, who spent his time there from the year 1688 to 1723, printed at Edinburgh in 1727.

Captain Hamilton also refers to the trade in opium carried on by the natives of India on the Malabar Coast and by the Dutch in Sumatra. "The chiefs of Calecut" he writes, "had for many years vended between 500 and 1,000 chests of Bengal opium, "yearly, in the inland countries where it is very much used."

Again as to Sumatra:—"The Dutch Company formerly drove a good trade in "opium at Pullamban, which (like French claret and brandy) drew much ready cash "out of this country, as those do out of ours, but in anno 1708, the king ordered only "the importation of three chests each containing about 160 pound weight; and if "smugglers were detected they paid their goods and lives for their disobedience."

"The Dutch have another factory right opposite to Malacca on the side of a large river called Bankalis. Whether that be a branch of Andraghira river I know not, but I believe it is. The Company vends a great deal of cloth and ophium there and brings gold dust in return. That beneficial trade was not known to the Dutch before 1685, that (*sic*) one Mr. Lucas, a factor in the Company's service at Malacca, was advised by a Malaya to send some Surat baftaes dyed blue, and some Berams dyed red, which are both coarse cotton cloth much worn in that country; and ophium is as much in request there as tea is with us."

Other references to the use of opium and its effects by travellers in the latter half of the 18th century need not be reproduced.

## Section B.

It is clear from Captain Hamilton's remarks, that Patna was established as an emporium of the opium trade in the early part of the 18th century; and in regard to the control maintained over the trade at this period by the Native Government, we have the authority of the Fifth Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 28th July 1812, for saying that the practice of the Mogul Government was to farm out the opium on "an "exclusive privilege for a *peiscush* or annual payment in advance." Warren Hastings, also, in a letter to his Council dated 15th October 1773, (which will be subsequently referred to) observed, that the culture of opium in Behar from its first introduction or, at least, for a long series of years was said to have always been a monopoly; and Sir John Macpherson, who succeeded Hastings as Governor-General, in a minute dated 4th July 1785, said that "the whole of the opium and saltpetre of Behar was "held for many years by a merchant named Foker ul Toojar, who had the exclusive "privilege of supplying the different European Companies with those articles." The exact nature of the arrangements which existed before the establishment of British supremacy in Bengal is, naturally however, somewhat obscure.*

App. 59 A. to the 9th Report of the Select Committee of the House of Commons, appointed to take into consideration the state of the administration of justice in the Provinces of Bengal, Behar, and Orissa, &c., printed in 1783, and Appendix of documents to the trial of Warren Hastings, Vol. VI., No. 386.

The time when the trade in opium from the east of India first attracted the attention of the European Companies is also at present uncertain; though the Dutch records, if available, would probably throw some light upon the subject.† John Hinchman,

* Sir James Lyall supposes that the Mogul monopoly of opium was probably established in the time of Akbar, but I have not been able to find any evidence to show that the monopoly existed as early as this. The Ain-i-Akbari is silent on the subject.

† Since the above was written, I received on the 26th October a Memorandum by Mr. F. C. Danvers, the head of the Record Department at the India Office, on the Dutch trade in opium during the 17th century, principally compiled from the Dutch East India records at the Hague. The Memorandum, which is here reproduced *in extenso*, shows that the Dutch began to trade in opium at the commencement of the 17th century, and that they obtained opium from Bengal as early as 1659. The greater antiquity of the trade from the west coast appears to be satisfactorily established by the additional evidence afforded by Mr. Danvers' inquiries.—R. M. D., 5th November 1894.

Memorandum on the Dutch Trade in Opium during the 17th Century, principally compiled from the Dutch East India Records at the Hague.

Before the Dutch took possession of the Malay archipelago, opium was supplied to Malacca and Singapore by the Portuguese. This trade was unknown to the Dutch in the latter part of the 16th century, and Cornelius Houtman, writing in 1596, does not mention it as existing at Bantam. Mr. Wybrandt van Warwyck does, however, mention that drug in 1603. When the latter had permission to establish a factory at Bantam he stated in a memorandum on the articles of trade to be embarked in, that at Banda, Moluccas, and Achin opium should form part of the cargoes. A few years later Martelief stated that opium was in use at Ternate.

In an account of the Indian trade of the Dutch, in 1613, it is said that 200 lbs. of opium were yearly sold in the Moluccas, and also that it was then profitably sold to Siam, Pegu, and China. The Guzerat merchants went yearly to Achin for spices, &c., which they paid for partly in money and partly in Guzerat clothes and opium, "which is a necessary article in the Moluccas, Amboyna, and Banda, and can be sold at a good profit."

who was examined as a witness before the Select Committee of the House of Commons, appointed to report on the affairs of the East India Company, in 1783, stated that no opium was provided on behalf of the English East India Company until after the cession of the diwani of Bengal, Behar, and Orissa in 1765, except a small quantity which was sent to Bencoolen. "From," he said, "the "acquisition of the territory to the years 1771-72 there was no investment provided "for the Company. From that time, by order of the Governor and Council, a certain "quantity of opium was annually provided by the Chief and Council of Patna on the "Company's account, but, whether the Council provided it at a fixed price settled by "the Governor and Council of Calcutta, or whether they were left to make contracts "with the native inhabitants of Patna, or whether they provided it by agents sent "into different parts of the province for the purpose, he could not directly say." Ram Chandar Pandit, who in the first year of the Company's monopoly was joint agent or contractor for the provision of opium in Behar, and afterwards, in 1788, was agent for the provision of opium in the province of Benares, submitted in 1788 a report on the subject of opium to the Resident at Benares, in which the Dutch were said to be the first large purchasers of opium.

App. 59 B. to the 9th Report of the Select Committee in 1783.

Selections from the Duncan Records, by A. Shakespear, Commissioner of Benares, published by authority, in 1873.

The notices of opium by Tavernier and Kaempfer in 1676 and 1689 show that the Dutch were dealing in the drug in the 17th century; and the fact, that for several years the best opium of the Dutch East India Company was the standard according to which the opium contractors in Behar bound themselves to supply opium for the English East India Company's sales, affords corroboration of the correctness of the Pandit's statement.

The French, the Portuguese, and the Danes also took some part in the opium trade from the East of India during the latter part of the 18th century.

Ram Chandar Pandit said further, that the principal seat of opium culture had always been in Behar, but this statement does not accord with the statistical information contained in the Ain-i-Akbari; and the Pandit was evidently not well acquainted with the circumstances of the poppy cultivation in Central India. As regards Behar and

(1.) Griffith's Contract for Behar, in 1775; App. 67 to the 9th Report of the Select Committee of the House of Commons in 1783.

(2.) Advertisement for the Opium Contract, dated 11th July 1785, published in Colebrooke's Digest of the Bengal Regulations, p. 405.

(*Note continued.*)

In 1631 no opium had been openly imported into Batavia by Dutch ships, but it is thought probable that it was even then surreptitiously introduced there by the Dutch Company's officers and servants. After the capture of Malacca by the Dutch in 1640, Batavia greatly increased its trade, which was conducted directly with Bengal, and opium was, after that, imported direct into Batavia; and 19 years later its use had become general in that city. In 1656 Mr. Van Doens went as Ambassador to Mataram, where opium was also then in use. In the same year, according to an old MS. by Van Dam, at Burnei in Borneo proper "opium and "clothes are very much in demand, and can be exchanged for gold. . . . . In Palambang and "Jambi, instead of Mexican reals and cloths, opium can also be exchanged for pepper."

In the first firman of the Dutch Company in Bengal, granted by Aureng-zeb, no mention is specially made of opium. In 1664, Mr. Hustaart submitted a report to the Governor General in Council at Batavia, about affairs in Malabar and Ceylon, wherein he stated that "the Company sent opium to Cochin in order to be "exchanged for pepper," that opium was considered there "the principal sort of profitable merchandize," and that interlopers from the inland found means to bring opium "over the mountains, against which we have no "remedy."

From a letter dated "Madura, the 28th November 1676," it appears that in the year 1667 no less than 85,000 lbs. (Dutch) of opium were required from Bengal for Cochin and the surrounding country. The profit from this trade at Batavia became so great that in 1676 the Dutch procured a monopoly for it, which was obtained in the following manner:—The Mataram Prince had made war against Troena Djaja and Macassar, when, in accordance with a treaty of 1646, the Dutch had to help the Mataram. The latter were successful, and in recompense for the aid afforded, the Dutch not only obtained an extension of their territorial possessions at Batavia, but they also specially had granted to them a monopoly for the importation of cloths and opium. This new treaty was signed in 1677. The principal object in securing this monopoly was in order to check the trade of Macassar, Malay, Bali, the Chinese, and the Moors, who had previously been the chief traders with Java in cloths and opium. In the following year the Dutch also obtained a similar monopoly from the Sultan of Cheribon. For a time the English and other Europeans who had factories at Bantam prevented the Dutch from maintaining a very strict monopoly in that trade; but after their conquest of Bantam in 1682 this was more effectually enforced.

In 1683 private trade in opium at Batavia was prohibited by the Dutch, and a notification was issued by the Government there to that effect, in which it was declared that all caught indulging in it would be liable to capital punishment; but the gradual decrease in the value of this article at Batavia, leads to the conclusion that large quantities must have been regularly imported by private traders in spite of this proclamation. In August 1684 the Dutch Government at Batavia issued a proclamation declaring the trade in opium at Macassar to be a monopoly.

Previously to 1659, the Dutch procured their opium from Surat, whence in 1640 they exported 187 lbs., and in 1650 this trade had increased to 648 lbs. In 1659 they began to procure opium from Bengal, in which year 1,312 lbs. were exported thence, and by 1677 their exports amounted to 12,025 lbs. But in 1678, the year after obtaining a monopoly from the Mataram, the Dutch imports of opium from Bengal amounted to 67,444 lbs. This trade then continued to increase, and by 1748 the Dutch imports into Batavia had risen to 217,500 lbs. After this the trade of the Dutch East India Company gradually decreased, being affected, no doubt, by the private trade of interlopers.

Benares, however, he was an undoubted authority, and his report, which was submitted by the Resident to the Governor-General in Council, contains much information of value.

According to Ram Chandar, when Europeans first appeared in the market as purchasers of opium for export, the cultivation of the poppy and the manufacture of opium were in the hands of the ryots or cultivators, and the opium produced was purchased by a body of merchants at Patna, known as the opium dealers, and by petty traders throughout the country called pykars, cash advances to the ryots being made, as required, by the Patna merchants. The competition of the English, French, and Dutch kept the trade in a flourishing state, the price paid for opium to the dealers usually averaging 100 to 150 rupees per maund; but on the temporary overthrow of the English Company by Suraj ud Dowla in 1756, the Dutch were left with a practical monopoly of the trade, and they beat down the price to 70 rupees per maund, so that "all the merchants and the pykars were next thing to ruin." After the battle of Plassey the English re-established their factory at Patna, and the gentlemen of the factory began to interfere actively in the trade, sending their gumashtahs (agents) into the different districts to make purchases for them on advances which they made for the purpose, and this led to quarrels between their agents and the agents of the French and Dutch. Eventually, in the Fasli year 1176 (1765) a joint concern was made of it, and "the French and Dutch were admitted to a share, so that there was but one "general agent as manager and purchaser of all the opium produced." The monopoly, however, was not so complete as to prevent those Europeans, who had no share in it, from dealing with the Pykars, and buying opium on their own account, and this led to complaints and litigation, which were put an end to by the assumption of the monopoly of the internal trade for the East India Company in 1773.

Report on the Miscellaneous Old Records at the India Office, by Sir G. Birdwood.

The trade in opium was officially recognised by the Directors of the East India Company, at least, as early as 1769, as the Commissioners sent out to India in that year to supervise the management of the Company's affairs throughout India were instructed to encourage the export of silk, yarn, and opium. The Commissioners were lost at sea, but it is not improbable to suppose that the instructions issued to them may have had the effect of directing the attention of the Company's servants in India to the subject of opium, and may have indirectly contributed to the establishment by them of the direct connexion of the Company with the traffic. The records indeed show that opium was provided on account of the Company for export to Bencoolen and Balambangan in Samatra, before any attempt was made to interfere with or regulate the arrangements for its production.

App. 59 A. to the 9th Report of the Select Committee in 1783.

The circumstances which led to this interference are thus described in the letter of 15th October 1773, from Warren Hastings to his Council, to which reference has been already made :—"The competitions which had begun to take place for the purchase of "ophium (*sic*) in the province of Behar induced me to make some inquiries concerning "the state of the trade and the mode of conducting it. I learn that from the first "introduction of the culture of ophium into Behar, or, at least, for a long series of years, "it has always been a monopoly, and, of course, always in the possession of power and "influence. This is the footing upon which it now stands.

"You are already informed that Meer Monhur (*sic*) contracted to furnish the "quantity wanted for the Company's use, which is 800 chests. In effect, he is in "possession of the whole exclusive trade in virtue of the powers granted to him by "the Chief and Council at Patna. Besides the quantity delivered to the Company the "Dutch factory is allowed 400 chests annually, and the French Resident puts in his "claim for 100 more. These may both be considered as indulgences, as it is optional "with the gentlemen of the factory to permit or disallow them."

The monopoly of the gentlemen of the Patna factory was not, according to Hastings, a new creation, but existed as far back as the year 1761, and was "in no way imputable "to the members of the Patna Council of the time," *i.e.*, 1773.

The exclusive privilege enjoyed by the Council was not, however, allowed to exist without challenge. As Hastings expressed it, "Everyone considered himself to be "equally entitled to the benefit of a trade from which he was not excluded by any "authentic act of Government," and the attempts made by Englishmen employed by the Company in Behar, and by others, who were mere adventurers, to share in the profits of the monopoly, produced a state of things in the Province which was held to necessitate the interference of Government. For the future, therefore, the Governor, while declaring his own conviction that it was not possible for Government, constituted

as it then was, to abolish the monopoly altogether, proposed three courses for consideration :—(1.) That a property should be declared in the trade upon conditions that would afford compensation to the Company for foregoing the advantages that the trade might yield if possessed by themselves. (2.) That the trade should be taken over for the whole emolument of the Company. (3.) That it should be made free. In discussing the arguments for and against the third course, and with special reference to the argument that free trade would increase production, Hastings urged that it was undesirable to increase the production of any article not necessary to life, and that opium was "not a necessary of life, but a pernicious article of luxury which ought not " to be permitted but for the purposes of foreign commerce only, and which the " wisdom of Government should carefully restrain from internal consumption."

In the course of consideration of the question by the Council, Mr. Vansittart recorded a minute, in which he stated, as a matter within his own knowledge :—" Ever since " the establishment of our influence in Bengal by the battle of Plassey, almost " the whole of the opium trade of the Behar Province has been in the hands of the " gentlemen residing at Patna. Through different Gomashtas being employed, frequent " disputes arose, and sometimes lives were lost in the frays which happened between " them, as has already appeared in the Company's records. Since the year 1765 it " has been uninterruptedly carried on as a joint concern, under the charge of a single " Gomashta." Extract Ben. Rev. Cons., 23rd Nov. 1773, App. 59 A to 9th Report of the Select Committee in 1783.

On 23rd November 1773, the Governor General and Council unanimously decided to assume the monopoly of the internal trade in opium, and the Resolution embodying this decision is here reproduced in extenso : " The Board, having fully debated and considered " the subject, are unanimously of opinion that the trade could not be laid open at this " juncture without being productive of evil consequences to the ryots and to the country, " and if it be continued a monopoly, they think it had better be so avowedly, and for the " advantage of the country, than in a clandestine manner for the benefit of a single " factory. It is, therefore, resolved that an exclusive privilege be given to Meer " Manneer, the successor of Meer Ashrof, for providing opium in the Behar Province; " that he shall engage to deliver in Calcutta all which may be produced in the Behar " Province, at 320 sicca rupees, and what he may procure from Ghazypore or any " other district of the Nabob Shuja ud Dowla, at 350 rupees (per chest), agreeably to the annexed writing, which shall be sent to Patna for him to execute; " that he shall deliver to the Dutch the usual quantity with which they have been " supplied at the customary price; that half the money shall be advanced immediately " and half on the delivery of the opium : that the quantity delivered to the Company " shall be sold on their account by public auction; and that what may be required " for the settlement of Balambangan shall be reserved for it and invoiced at the " medium price of the sales at the auction. The Board are induced to give this " exclusive privilege to Meer Manneer in preference to anyone else, because, being the " person who has for some years been employed by the gentlemen of Patna in this " business, he is the best acquainted with the proper mode for managing it, and will " account with them for any advances which they may have already made. Extract Ben Rev. Cons., 23rd Nov. 1773, App. 59 A as above.

" As the success of the opium trade depends much upon its quality and the exportation of any which is bad, renders the Malays suspicious of the whole, and thereby " diminishes the demand for it, and is injurious to the commerce of Bengal, the Agent " shall be required to be particularly attentive to this subject. And as considerable " quantities of a bad quality have of late been imported from Nyapur, and other " parts of the Nabob Shuja ud Dowla's country, it is resolved, that as a discouragement " to such importation and the manufacturing of bad opium, an additional duty of " 1 sicca rupee per seer be levied upon all opium not provided by the aforesaid agent, " and that orders be in due time issued to the Customs Houses."

It is clear from this Resolution, that the Board when deciding to assume the monopoly, merely intended to place themselves in the position hitherto held by the Patna Provincial Council as monopolists of the internal trade, with an undefined right of interference in the manufacture of opium, and that they did not propose to assume any monopoly of the seaborne trade to China, Java, and other places.

The Resolution does not refer to the allotment of any chests to the French, but subsequent records show that they were allowed to receive 300 chests a year at a favourable rate.

At first sight it seems strange that a section of the Company's servants at Patna should have succeeded in monopolising the internal trade in an important staple

product of the country, but the circumstances of Bengal at the time were peculiar. The following description of the state of affairs then existing was given in the 9th Report of the Select Committee of the House of Commons upon the affairs of the East India Company in 1783: "The Company's servants, armed with authorities, delegated from the "nominal Government, or attended with what was a stronger guard, the fame of their "own power, appeared as magistrates in the markets in which they dealt as traders. "It was impossible for the Natives in general to distinguish, in the proceedings of the "same persons, what was transacted on the Company's account from what was done "on their own; . . . . . The servants, therefore, for themselves or for their "employers monopolised every article of trade foreign and domestic, not only the raw "merchantable commodities, but the manufactures; and not only these but the "necessaries of life, or what in these countries habit has been confounded with them; "not only silk, cotton, piece-goods, opium, saltpetre, but not unfrequently salt, "tobacco, betel nut, and the grain of most ordinary consumption."

A monopoly, therefore, which, as stated by Warren Hastings, had always been in the possession of power and influence would naturally under these circumstances have fallen into the hands of the Company's servants, employed at the head centre of its operations.

Translation of Agreement dated 2nd Dec. 1773, in App. 61 to the 9th Report of the Select Committee in 1783.

The agreement executed shows that Ram Chandar Pandit was associated with Meer Manneer in the exclusive privilege or contract granted in pursuance of the Board's Resolution of 23rd November 1773, and the arrangements thus made for the provision of opium were continued for a second year 1774–5.

Letter from the Governor General and Council to the Court of Directors dated 29th December 1781. App. 79 to the 9th Report of the Select Committee in 1783.

A letter written from Bengal in 1781 shows that the Danes, like the French and Dutch, were also allowed to receive, as an indulgence, a certain number of chests of the opium provided on behalf of the East India Company.

Report of the Commission appointed by the Government of India, to inquire into the working of the Opium Department in 1883.

The allotments to the French and Dutch were withdrawn upon the conquest of the possessions of those nations in India and Ceylon in the wars which followed the French Revolution. The concession to the Danes was maintained for some years longer. The concession to the French was renewed in 1815, and their right to an allotment of a specified number of chests annually is still recognised, though the right has since 1884 been commuted for a cash payment.

Letter from the Patna Council dated 9th Jan. 1775, Ben. Rev. Cons., dated 18th Jan. 1775, App. 61 to the 9th Report of the Select Committee in 1783.

In January 1775 while the provision of opium was still in the hands of Meer Manneer and Ram Chandar, the Patna Council applied for instructions in regard to its management, as the Board of Trade had apparently evinced an intention of taking it under their charge. "The management of the opium business," wrote the Council, "from the "manner in which it is provided, is so closely connected with, and of such material "import to the collection of the revenues, we apprehend the superintendancy (*sic*) cannot "be separated without great impediment to the provision of that article or danger to "the revenue arising from it. Disputes must unavoidably happen between the "Gumashtahs employed in collecting the opium and the revenue officers."

Ben. Rev. Cons. of 18th Jan. 1775, App. 61 to the 9th Report of the Select Committee in 1783.

This letter came before the Council General constituted by the Regulating Act of 1773 and the question was considered whether "the contract of opium ought to be "considered as an article of revenue or of the Company's investment."

The question in the form in which it was before the Council seems to have been mainly one of management. As Clavering put it:—The management and government of all territorial acquisitions and revenues of Bengal had been entrusted to the Governor General and Council by the Legislature of Great Britain, while the management of the commercial affairs of the Company had been entrusted by the Board of Directors to the Board of Trade. If, therefore, the contract were a commercial transaction, the management of the concern would rest with the Board of Trade, while if the income derived from it were regarded as revenue, the Governor General and his Council would be responsible for the duty of supervision. Francis, Clavering and Monson, forming a majority of the Council were of opinion that the contract was a branch of the territorial revenue. Hastings, and Barwell thought that it was an article of investment. The matter however was not thought to be of much importance. "It seems immaterial in effect," wrote Francis, "to the Honorable Com-"pany to which Board this contract may belong." "After all," wrote the Governor General, "I think it a matter of little consequence on which way the question may "be determined. It may be hereafter and I wish to be correct in my own opinion "upon it."

The decision of the majority was duly communicated to the Board of Trade and reported to the Directors, who wrote in reply: —"As the Revenue Council at Patna are "of opinion that the opium business may be more conveniently conducted by their Board "than by our commercial servants; on that consideration only, we direct that the "provision thereof be continued under your management, but that you consign the "same, when provided, to our Board of Trade, at prime cost; who are to dispose "thereof at public auction and to apply the produce towards the provision of our "investment."

Letter to the Board of Trade, dated 18th Jan. 1775.

Letter from the Court of Directors to the Governor-General and Council in Bengal, dated 15th Dec. 1775. App. 60 to the 9th Report of the Select Committee in 1783.

Hastings' minute on this question contains the following description of the position then occupied by the Company in regard to the opium. "It is received from the contractor "by the factory at Patna and sent down to the Presidency where, a part being reserved "for the trade of the settlement of Balambangan, the rest is sold at public auction; "and the produce, after deducting the prime cost and charges, is set apart as a fund for "payment of the gratuities proposed to be allowed to members of the late council, "in lieu of their advantages of trade from which they interdicted themselves."

Ben. Rev. Cons. of 18th Jan. 1775, App. 61 to the 9th Report of the Select Committee in 1783.

In the same year that this question was raised as to the management of this business, the Patna Council were directed to submit their opinion "what mode it will be most "advisable to adopt for the future provision of the opium," and in a letter, dated 27th March 1775, they recommended that a monopoly of the whole trade should be established in favour of the Company, and suggested that the Company should export the opium on their account to China. As an indication of the demand for opium and extent of the trade then existing, it is noteworthy that the Council estimated that if the French and Dutch were excluded from the trade and smuggling stopped they would be able to provide at least 33,000 chests a year, the profit on which if sold on the Company's account in China with a contract price in Bengal of 230 Rs. or 240 Rs. a chest would, as they said, be prodigious.

Letter from the Patna Council, dated 27th March 1775, in Ben. Rev. Cons. of 3rd May 1775;

App 59 A. to the 9th Report of the Select Committee in 1783.

On this letter Hastings proposed, "that the whole produce of ophium, manufactured "in the Province of Bahar, be appropriated to the Company's use;" and that the opium should in future be provided for the Company by the Patna Council or (if this should be thought undesirable) by a single agent, remuneration being given by a per-centage on the profit from the sales. The suggestion that the Company should export the opium on their own account to China was ignored.

Minute of May 1775 Ben. Rev. Cons. of that date.

The letter of the Patna Council with Hastings' minute came before the Council, and the question considered was whether the opium should in future be provided by agency or by contract. Hastings and Barwell favoured an agency, but Francis, Monson, and Clavering, forming a majority of the Council, decided in favour of a contract.

Ben. Rev. Cons. of 23rd May 1775, App. 62 to the 9th Report of the Select Committee of 1783.

"Upon the whole," wrote Francis, "I am of opinion that if it be not thought "advisable to lay the trade open, the best method both for the Company and the "country will be to contract with some native merchants of known credit and character, "upon such fair terms as may enable them to make a reasonable profit, without "squeezing the farmers or ryots who cultivate the lands. The Provincial Council "will then be a check upon the contractor; and if the present salaries of the "Provincial Councils be thought inadequate to their stations, a proportion of the "Company's profits by the contract may be set apart and divided equally amongst "them. I am satisfied of the insufficiency of their present salaries; and I believe "there is no other fund out of which they can receive an augmentation so properly as "the opium contract."

"I think," wrote Clavering, "it ought to be managed by contract; because, as Mr. "Francis has very well observed, the ryot can have no appeal from any injustice that "may be done him, if the agency be entrusted to those who constitute the "Government."

"To prevent the adulteration or debasement of the quality of the opium," the Council further decided that the opium in its crude state should be brought by the contractor to a place fixed by the Patna Provincial Council, and be there manufactured by him under the supervision of a person or persons appointed for the purpose by the Board.

Tenders were accordingly invited, and contracts for one year were assigned to the lowest of 13 bidders, to Mr. Griffith for the provision of 2,980 chests in Behar, at 180 Rupees a chest and 2½ per cent. commission on the sales at Calcutta, and to Mr. Wilton, for the provision of 1,000 chests in Bengal, at 240 Rupees a chest without commission.

Letter from the Governor General and Council in Bengal to the Court of

Directors, dated 24th Nov. 1775, App. 61 to the 9th Report of the Select Committee in 1783.

In acknowledging the report of these proceedings on the 24th December 1776, the Court of Directors wrote:—

"If you shall be of opinion that abolishing the monopoly of opium will contribute in any great degree to the relief of the natives, we authorise you to give up that commodity as an article of commerce, only fixing and reserving a reasonable duty thereon to the Company, which we think should not exceed 30 Rupees a maund."

Ben. Rev. Cons. of 3rd Sept. 1776, App. 63 to the 9th Report of the Select Committee in 1783.

Messrs. Griffith and Wilton received an extension of their contracts for one year for 1776–77, but the question whether the monopoly should be retained or not was further considered before the extension was granted. Francis, who was strongly opposed to all monopolies on principle, was in favour of its abolition. "The general principles," he wrote, "upon which I have invariably condemned monopolies, whether in the hands "of individuals or of Government, will not permit me to consent to the continuance "of this, or any other monopoly of the labour of the subject." Clavering, however, declared he was convinced that as long as there was a Provincial Council at Patna "a "monopoly would exist in spite of every effort of Government to abolish it," and that an avowed monopoly was better than supposed free trade; and his vote decided the question.

Letter from the Governor-General and Council in Bengal to the Court of Directors, dated 18th Nov. 1777, App. 66 to the 9th Report of the Select Committee in 1783. Letter from the Court of Directors to the Governor General and Council, dated 23rd Dec. 1778, App. 70 to the 9th Report of the Select Committee in 1783.

In 1777 Mr. Mackenzie received the whole contract for three years on the same terms as the former contractors, a measure which called forth a strong protest from the Court of Directors. After referring to the authority given in their letter of December 1776 for the abolition of the monopoly, with the reservation of a reasonable duty to the Company, and to the information which they had received of the grant of the contract for Mr. Mackenzie, they remarked:—"If any means could be "devised to prevent the monopoly of opium and at the same time to secure a proper "revenue to the Company from that article we (should) still prefer the opening of the "trade; but we find it repeatedly urged in your proceedings that a monopoly of opium "cannot be prevented; that it will exist in spite of every effort of Government to "abolish it. And if this be true we must of necessity consider it an evil to which no "adequate remedy can be applied, and acquiesce in giving the Company a preference "which may be less oppressive in their hands than in those of individuals. We "observe Mr. Mackenzie's offer was to pay 10,000 sicca rupees per annum as a "consideration for holding the opium contract on the terms of his predecessors and of "being indulged with such additional advances of money as he might require. "These proposals you accept without acquainting the former contractor or any other "person with the terms therein contained. But after two years' experience of "providing opium by contract you should have ascertained, by advertising for other "proposals, whether the price thitherto paid to the contractor had been reasonable "or whether any other respectable person would engage to provide it on terms more "advantageous to the Company; and as you acted otherwise and, so far as appears to "us, concluded a contract of great importance without advertising for proposals or "making previous inquiries necessary to guide your judgment therein and to warrant "the measure, we therefore disapprove your conduct on that occasion."

Letter from the Governor-General and Council in Bengal to the Court of Directors, dated 25th Nov. 1780, App. 78 to the 9th Report of the Select Committee in 1783, and letter from Mr. Mackenzie dated 16th May 1780 to the Governor-General and Council in the Appendix of Documents produced at the trial of Warren Hastings, Vol. VI., No. 382. Extract Ben. Rev. Cons., dated 16th March 1781 and 6th Nov. 1781, App. 71 and 73, and letter from the Governor-General and Council in Bengal to the Court of Directors, dated 5th May

Notwithstanding this disapproval, Mr. Mackenzie received, in 1780, an extension of his contract for another year, and at his request the packing and despatching of the opium were taken out of the hands of the Patna Council and made over to him, and he was directed to consign the opium to the Superintendent of the Khalsa Records at Calcutta for sale instead of to the Board of Trade, the proceeds of the sales being, as before, made over to the order of the Board of Trade for application to the purpose of the investment. The delay caused by the packing and despatching of the opium from Patna was said by Mr. Mackenzie to have "enabled the private merchants in the "districts of the Vizier (of Oudh), and Rajah Cheyt Singh to get their opium to "Calcutta before the Honourable Company's."

In 1781, Mr. Stephen Sulivan received, on the recommendation of the Governor-General, a contract for the supply of opium for four years on the terms upon which the contract had been held by Mr. Mackenzie, and the offices of Inspectors of opium at Patna were at the same time abolished as being no longer necessary. The officer entrusted with the conduct of the opium sales at Calcutta was however, required to report to the Council the quantity and condition of all opium delivered there by the contractor.

This contract was condemned by the Board of Directors and formed the most important of the charges of wasting public money, which were comprised in the 4th Article of Hastings' Impeachment, the terms of the contract being described as "glaringly extravagant and wantonly profuse." The Directors censured the Governor-

General and Council, for concluding the contract without leaving the terms of it for their decision, after they had already condemned the contract entered into with Mr. Mackenzie, and remarked that they could not "withhold their displeasure at such an instance of contempt of *their* authority." "It would," they added, "have been much more agree-"able to us to have seen that the monopoly of this trade had been entirely abolished, "leaving the article of opium as open as any other produce of the country. The "cultivator should receive every advantage from the produce of his lands, which "would be a most pleasing inducement to him to consent to an increase of his rent."

1781, App. 85 B. to the 9th Report of the Select Committee in 1783.

Paras. 53 and 54 of letter from the Court of Directors to the Governor-General and Council in Bengal, dated 12th July 1782, App. 86 to the 9th Report of the Select Committee in 1783.

At Hastings' trial the charge relating to this contract appears to have been strongly pressed. It was proved that Mr. Sulivan resold the contract at a large profit, and the contempt displayed for the standing orders of the Court of Directors on the subject of public contracts, which required that all contracts should be advertised and the lowest offers with security for due performance accepted, and for the orders communicated in the letter of 23rd December 1778 condemning the contract granted to Mr. Mackenzie, was much relied on by the Managers of the impeachment. Corrupt motives on the part of Hastings were not, however, established, while in regard to the contempt which he had displayed for the orders of the Court of Directors in giving the contract by favour, subsequent to the receipt of the orders passed in regard to Mr. Mackenzie's contract, it was forcibly urged in his behalf that the extension granted to Mr. Mackenzie, for which Francis and Wheeler, forming a majority of the Council, were said to be responsible, was equally an act of contempt. The verdict was acquittal on the charge by 19 votes against 5.

In the same year that the contract was given to Mr. Sulivan the Governor-General and Council forwarded opium on the Company's account for sale to China and the Straits, and this venture formed another of the charges against Hastings of wasting public money; the charge being that for the purpose of advancing money to the opium contractor and in order to favour certain individuals a loan was raised and the Company engaged in a smuggling venture in opium to China.

This matter was, it may be noted, incidentally referred to by Bishop Thoburn, one of the anti-opium witnesses who appeared before the Royal Commission.

The facts are as follows:—On 29th March 1781 a Colonel Watson wrote a letter to the Governor and Council suggesting that the opium trade to China should be taken by Government under its own management, and that opium required for that market should be consigned for sale to the Company's Supracargoes at Canton, and offering his ship the "Nonsuch" for the purpose. On 28th July 1781 Mr. Cudbert Thornhill made a similar offer of his ship the "Betsey" for the export of opium on the Company's account to the Straits and to China. The Company's opium was at the time unsaleable at Calcutta, even at Rs. 400 per chest, as the shipping of the port was engaged in supplying the Madras coast with grain; the navigation of the China Seas was rendered dangerous by privateers from Mauritius and Batavia; and the Batavia market was temporarily closed. The export of opium also would, it was anticipated, obviate the necessity for cash remittances to China for provision of the Company's investment there. The offers, therefore, were accepted: 2,000 chests of opium were sent in the "Nonsuch" to the Supracargoes at Canton, and 1,450 chests were sent in the "Betsey" for sale in the Straits of Malacca. In the meantime, to raise money to "meet calls from other Presidencies and make up for the resource expected from the "sale of the opium," a loan of 10 lakhs of rupees was raised on the security of the cargo of the "Betsey" from the civil and military servants of the Company, to be repaid by bills of exchange on the Company from the Canton Supracargoes in the event of the safe arrival of the opium or the produce thereof in China, while, in case of failure, the loan was to be repaid in India with interest at 8 per cent. Another loan of 10 lakhs was raised from the public on the cargo of the "Nonsuch" on similar terms. The venture, from various causes, was not successful, though the object of avoiding a cash remittance to China appears to have been attained. The "Betsey" was captured in the port of Rhio by the French and Dutch, but some portion of the cargo was sold before her capture to great advantage. The Supracargoes at Canton also had considerable difficulty in disposing of the cargo of the "Nonsuch," on account (as they reported) of the prohibition of the import of opium by the Chinese Government, and on account of the "immense quantities" of opium brought to Macao in Portuguese ships before the arrival of the "Nonsuch"; and eventually sold the consignment at a loss of 69,973 dollars.

Extract Ben. Rev. Cons., of 17th Sept. 1781, App. 80 to the 9th Report of the Select Committee in 1783.

Letter from Captain Robert Geddes to Mr. Cudbert Thornhill in Extract Ben. Rev. Cons., dated 3rd March 1783. Letter from the Supracargoes to the Court of Directors dated 28th Dec. 1782, in a Collection of papers relative to Warren Hastings' unpeachment, at the India Office.

The Court of Directors also, on hearing of the venture, condemned the export of opium on the Company's account to Canton on the ground that the import of the drug

Paras. 55 and 56 of letter from the Court of

Directors to the Governor-General in Council, dated 12th July 1782, App. 87 to the Report of the Select Committee in 1783.

was prohibited by the Chinese Government, and that it was beneath the dignity of the Company to be engaged in a clandestine trade; and prohibited such export in the future. They held, however, that there was no objection to the scheme for the sale of opium in the Straits of Malacca.

Books entitled, History of the trial of Warren Hastings, and Debates of the House of Lords on the evidence delivered in the trial of Warren Hastings.

Hastings' action in regard to this enterprise was denounced in the course of his trial by the Earl of Carnarvon, but the objects with which the loans were raised were shown to be above suspicion, and he was unanimously found not guilty upon the charge; the questions covering this and one other charge being the only two out of the 16 put to the adjudicating peers, upon which Hastings was unanimously acquitted.

In a "History of the trial of Warren Hastings from February 7th, 1786, until "his acquittal on 23rd April 1795," written it must be said by a friend and admirer of Hastings, the following passage occurs in the course of a summary of the facts established by the managers of the impeachment in regard to the charge:—"It "appeared that the Board of Control have approved a plan exceedingly similar to this "(*i.e.*, the sending of opium on the Company's account to China), and it is not improper "to say that Mr. Pitt in the House of Commons declared there could be nothing criminal "in sending opium to China, nor was he at all ready to say that the scheme was not a "very proper one."

This direct venture was, however, undoubtedly an exception to the course of policy pursued by the East India Company in regard to the trade.

The dislike of the Court of Directors to the opium monopoly was, as has been shown, manifested in more than one communication, and the Select Committee of the House of Commons in their 9th Report in 1783, expressed themselves unfavourable to the principle of a monopoly though they did not directly recommend its abolition.

Minute by Sir John Macpherson as Governor-General, dated 9th April 1785, and letter from the Governor-General and Council to the Court of Directors, dated 29th April 1785, in Collection of papers relative to Hastings Impeachment.

In 1785 therefore the subject was further considered by Sir John Macpherson, who succeeded Hastings for a short time as Governor-General. The question of providing the Company's Supracargoes in China with funds for the investment without draining India of specie was then seriously engaging the attention of the Company's Government in India and of the Court of Directors, as the reduction of the tea duties in England would, it was thought, lead to a large increase in the demand for that article.

The opium of the year was accordingly offered for sale on the understanding that payment for it should be made at the Canton Treasury; and Sir John Macpherson and his Council determined, subject to the approval of the Court of Directors, to apply in future the proceeds of the opium monopoly to the "exclusive benefit of the China trade." With this object in view Sir John Macpherson proposed for consideration three schemes for the future management of the opium trade.

(1) That the exclusive right to the manufacture of and trade in opium should be assigned to an Association of merchants residing in Calcutta for a period of five years, on condition that the whole amount of the Benares and Behar opium or at least 3,500 chests should be annually exported from India for sale abroad, and that an annual payment of 400,000 rising to 800,000 Spanish dollars should be made by the Association into the Company's Treasury at Canton; the price payable by the Association for the opium to the East India Company being fixed at Rs. 200 for each chest, and the Company agreeing to reimburse the Association in rupees at a fixed rate of exchange for any excess in the amount paid at Canton over the sum due for opium exported. Opium of "the 2nd and "3rd sort not deemed fit for the export trade" was to be left to the Association to dispose of, on payment at Canton to the East India Company of a sum of Rs. 100 per chest.

(2) That the trade should be conducted by the East India Company's servants as a monopoly for the Company; that part of the opium should be sold to the Dutch in Java, and that for the sale of the remainder a depôt should be established at Tringana in the Eastern Islands, whence the demand in China, (which was estimated at 1,200 out of a total of 3,500 chests), and in the other adjacent islands, might be supplied without difficulty; and that the money realised for the opium should be sent as a remittance to Canton.

(3) That a contract for the provision of opium should be given to the persons offering the most advantageous terms, and that the opium provided should be sold by public sale at Calcutta on condition that the price in cash should be paid before a date specified to the Supracargoes in China.

"We consider," wrote the Governor-General in Council, "the further exportation of "specie from these Provinces, as public credit now stands, in so alarming a point of "view, that we imagine it would be more for your interest to transfer the opium "entirely to the Dutch on the condition of their paying its value in money into your "Treasury at Canton, than to leave it on its present uncertain footing."

Extract of Ben. Rev. Cons., dated 11th July 1785, in the Appendix of Documents produced at the trial of Warren Hastings. Vol. VI. No. 386.

Subsequently in July 1785, before receipt of a reply to these proposals, Sir John Macpherson and his Council discussed the measures which should be taken, upon the expiration of Mr. Sulivan's contract on the 31st August, for the future management of the opium revenue.

Three methods of raising a revenue were considered :—

(1) By increasing the rent (*sic*) of lands under poppy.

(2) By laying the trade open to all purchasers and levying an export duty on the opium.

(3) By maintaining the monopoly in the form then existing, or by creating a monopoly in favour of an Association, as suggested in the Governor-General's Minute of 9th April 1785.

The first measure, though pronounced to be "conformable to the sentiments and "wishes of the Court of Directors" was rejected on the grounds that it was unsuitable to the agricultural conditions of Behar; that a fourfold enhancement of rent would be necessary to produce a revenue equal to the profits annually derived from the opium monopoly; and that the Zemindars and Ryots who were naturally suspicious of innovations, would not agree to any enhancement of rent for a problematical advantage; while on poppy lands held rent free the measure would necessarily be inoperative.

The second measure was thought to be superior to the first, though the risk of smuggling and the certainty of deterioration in the quality of the opium with a consequent loss of its reputation in the Eastern market, were held to be weighty objections to it.

In regard to the third measure, the Governor-General strongly defended the principle of a monopoly. "I entertain," he wrote, "my share of the general prejudices which "prevail at home against every system that bears the appearance of monopoly. Much "has been said against the monopoly of the opium: nor does the immediate apparent "gain upon it as a monopoly appear of magnitude enough as an inducement to persist "in it; but the value of the commodity to these provinces is a different consideration; "and I very much believe that it never was and never can be secured to this country "on any footing but that of a monopoly of some kind or other, such are the dispositions "and habits of the natives, and the peculiar customs of the country."

"It is a mistake to imagine that monopolies were not practised under the old "country government; they always did exist in various degrees. It is well known "that the Salt Collaries (*sic*) of Bengal were actually farmed out to a few sub-"stantial merchants, who on agreeing for the rents and to pay a certain duty at the "Custom Houses had the entire salt trade in their own hands; and the whole "opium and saltpetre of Behar was held for many years by a merchant named Foker "ul Toojar, who had the exclusive privilege of supplying the different European "companies with these articles, for which he paid an annual peishcush or rent to "Government.

"Monopolies were of the earliest date in this country, and a principal means of rais-ing "the revenue long before it came in the Company's possession. It was upon the "principle of monopolies that foreign Companies were first admitted in these Provinces "and protected in particular branches of trade. The farming of the revenue to "Zamindars and Renters was a part of this system; and I fear that it will be found in "the end that it is only by some species of monopoly that the opium can be made any "certain source of productive revenue."

The Governor-General's views were approved by the Members of his Council, and subject to the possibility of the adoption by the Court of Directors of the scheme suggested for the creation of a monopoly in favour of an Association of Calcutta merchants, it was decided to retain the Company's monopoly of the right of purchase from the cultivators, and to offer the contract for the provision of opium for the public sales, for four years, to the person or persons offering the most advantageous terms.

The advisability of providing opium by agency instead of by contract, as proposed by Warren Hastings in 1775, was also discussed, but the contract system was preferred as it was said to have worked well for 13 years, and the suspicion of favouritism which, it was thought, would certainly attach to the appointment of an agent, was regarded as a strong objection.

Paragraphs of letter proposed by the Court of Directors to be sent to Bengal, as approved by the Board of Control, in the Collection of papers relative to Hastings' impeachment.

In acknowledging the communications on the subject the Court of Directors, with the approval of the Board of Control, appointed in accordance with the Act of 1785, declared their opinion that opium was "undoubtedly a proper object of encouragement "for foreign commerce," and accepted the principle that the proceeds of the monopoly should be applied to the benefit of the China trade; the conduct of the Governor-General in Council in the several steps he had taken to place the opium trade "upon a "beneficial footing to the Company" and to supply the Supracargoes with specie "without draining the Provinces" was commended; and permission was given to him to adopt any plan which he might think best fitted to secure the object in view. A preference was however expressed for the third of the schemes proposed by Sir John Macpherson, as "appearing to be more consistent with the general freedom of commerce than the other two;" and the second scheme, in so far as it contemplated the direct supply of opium to China, was pronounced open to objection on the ground that it would involve the Company in an illicit trade. The advantage of possessing a trading establishment in the Eastern Islands whence any opium that might be required by the Chinese would find its way to China was, however, favourably commented on.

Collection of papers relative to Hastings' impeachment.

The most advantageous terms for the opium contract were offered by Messrs. Young and Heatly, and the contract was accordingly granted to them for four years from 1785 to 1789.

Selections from the Duncan Records, by A. Shakespear, printed at Benares in 1873.

In 1787–88, the arrangements for the provision of opium were extended to the Zamindari or Province of Benares, provision being made in the first two years by the agency of Ram Chandar Pandit and subsequently by public contract.

In 1788–89 also, Earl Cornwallis and his Council once more considered the possibility of throwing open the trade, and scrutinised the arrangements which had been adopted for the provision of opium. No important change of system was, however, introduced, and another four years' contract was granted with some modification of the conditions intended for the relief of the poppy cultivators.

Trial of Warren Hastings, Appendix of Documents, Vol. VI., App. 429,

The following extract from the Minutes of a Consultation of the 29th July 1789, at which the Governor-General, the Hon. Charles Stuart and Mr. John Shore were present, gives the reasons for the decision to retain the monopoly:—"Although upon "general principles, the Board cannot but disapprove all monopolies, especially when "in the hands of Government, many considerations induce them to reject the abolition "of the monopoly in question, of which the following is (*sic*) the principal. 1st. Were "the trade to be laid open, the Board are of opinion that the quality of the opium "would soon be so much debased as to destroy the reputation of the commodity in "the Eastern markets, and thereby lessen the demand for it, which might ultimately "affect the cultivation of it in Bengal and Behar, to the detriment of the revenue.

"2nd. The relinquishment of the monopoly would occasion an immediate defalcation "on the resources of Government, equal to the amount of the profits now derived from "it; nor would this loss be made up by any other means; but a very small part of it "could be resolved by imposing an increase of rent in the poppy lands without "oppressing the cultivators, who would in consequence relinquish the cultivation "altogether, and the late arrangements made in the Customs would render the "imposing any duties on the exportation of it less practicable than heretofore.

"3rd. The opium now serves as a remittance to China to answer the bills drawn "upon Canton for the provision of the investment. Were the trade to be laid open, "it is probable that this resource might in some measure fail, and occasion the exportation of large sums in silver from this country, already too much drained of its "circulating specie.

"These considerations may in course of time have less weight, but in the present "state of the Company's affairs, they appear to the Board of sufficient importance to "induce them to give up all thought of relinquishing the monopoly, more especially "as they have little doubt that by increasing the price to be paid to the cultivators, "abolishing the cesses imposed upon them by former contractors, and defining the "rights of the ryots, and limiting the authority of the contract, the cultivation of the "poppy may be rendered equally advantageous to the ryots as any other article of "produce."

The provision of opium by agency instead of by contract was also once more considered; but the greater certainty of profit under the contract system, and the undesirability of adding to the duties and responsibilities of Government and Government officers, were held to outweigh the advantages that might be expected from direct management, while the evils which had been found to attend the provision of opium by contract might, it was thought, be obviated by modifying the terms of the agreement.

In 1793 the office of Preparer of Public Reports (Superintendent of the Opium Sales) was abolished, and the management of the opium concern was transferred from the Revenue Department to the Board of Trade; and Regulation XXXII, of 1793 was passed embodying the provisions of the four years contracts in Bengal and Behar from 1793 to 1797, and containing measures for the protection of the cultivators against coercion by the contractors, and of the contractor against frauds by the cultivators, and for the prevention of illicit traffic in opium.

App. 9 to the 2nd Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th May 1810.

In 1795, a similar Regulation, Number XXXII., was passed for the Province of Benares; and Regulation LIII. was enacted to prevent illicit trade in opium in the Province of Bengal and the cultivation of the poppy in that Province without the knowledge of the contractor.

In 1797, on the expiration of the four years contracts concluded in 1793, orders were issued to discontinue the provision of opium in the Province of Bengal on account of the inferiority of the produce; and the cultivation of the poppy was restricted to Behar and Benares. The import into the Provinces of Bengal, Behar, Orissa, and Benares of opium produced in the territories of the Nawab Vazir of Oudh or in any foreign country was also formally prohibited, and breach of the prohibition was made a punishable offence, by Regulation I. of 1797.

Second Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th May 1810.

The opium revenue declined considerably during the latter years of the contracts. The conditions of the contracts were rendered stringent by competition; the price at which the crude opium was to be purchased from the cultivators was prescribed; and the price at which Government agreed to take over the opium was fixed so low as to leave to the contractors an insufficient margin of profit. This led to deterioration in the quality of the opium and to a consequent diminution in the price realised for the opium at the public sales. The contract system was discredited, and in 1797 the Governor-General in Council "with a view of restoring and improving this important "branch of the public revenues" decided that the contracts should be discontinued and that the opium should in future be provided by agency. Bengal Regulation VI. of 1799 was accordingly enacted to give effect to this decision.

Fifth Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 28th July 1812.

Cultivation of the poppy in the Provinces of Bengal, Behar, Benares, and Orissa, except on account of Government, was prohibited by the Regulation, but it was left to the option of the cultivator to enter into engagements at a settled price or to decline the cultivation altogether. The Regulation also prescribed rules for the guidance of all persons concerned in the provision of opium on behalf of Government; for securing to Government all opium produced in the four provinces, and for preventing the illicit cultivation of the poppy and the illicit importation or traffic in opium.

Second Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th May 1810.

This Regulation, which was subsequently modified by Regulations V. of 1807 and VI. of 1809, laid the foundation of the Opium Department in Bengal.

In 1803, with the object of further safeguarding the revenue derived from opium in the Provinces of Behar and Benares, the cultivation of the poppy in the provinces ceded by the Nawab Vazir of Oudh was prohibited by the enactment of Regulation XLI. of that year, and rules were framed to prevent the illicit cultivation of the poppy and traffic in opium in the ceded provinces, and the importation of opium from them into the provinces of Bengal, Behar, Benares, and Orissa.

The measures above described were scrutinised and reviewed by the Select Committee of the House of Commons appointed to inquire into and report on the affairs of the East India Company in 1808–1812.

The Committee in their Second Report, submitted in 1810, recognised that the opium trade was liable to be affected by many contingencies such as "adverse seasons and "the state of the markets to the eastward," and that the revenue must therefore be "considered as fluctuating in its nature." They commented, however, favourably upon the advantages of the agency as compared with the contract system, remarking that the "measures resorted to for securing the provision of the drug, pure and "unadulterated, had proved of essential service," as the prices obtained for the opium had risen largely of late years.

Second Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th May 1810.

In their Fifth Report submitted in 1812 the Committee observed that the "monopoly "of the opium produced from the culture of the poppy" was the third principal branch of the East India Company's territorial revenue in India, and further that the trade under judicious management was calculated to be, and "had shown itself to be, a very considerable financial resource."

Fifth Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 28th July 1812.

The question whether the opium revenue was a desirable financial resource, or whether it was open to serious objection on moral grounds, does not seem to have suggested itself for consideration.

SECTION C.

Letter from the Governor-General in Council to the Government of Bombay, dated 7th April 1803.

No information is apparently available in official records regarding the trade in opium from the West of India during the 18th century. The disturbances which attended the establishment of Mahratta dominion in Malwa and Gujarat probably affected injuriously the poppy industry in Central India; but the trade does not appear to have been interrupted, and in 1803 it attracted the attention of the Marquis Wellesley, then Governor-General.

The Government of Bombay was accordingly asked for information as to the quantity of opium usually exported from Bombay and the stations subordinate thereto, and as to the country in which it was produced.

Letter from the Government of Bombay to the Governor-General in Council.

The Bombay Government in reply submitted a report on the subject by the Reporter-General on External Commerce, in which the quantity of opium imported into Bombay and the stations subordinate thereto, for purpose of re-exportation from Surat and the northern ports of Gujarat and the Arabian Gulf during the three years 1800–1, 1801–2, and 1802–3, was said to amount to 3,700 Surat maunds, and the average quantity annually imported to 1,233 maunds. "The opium exported from Bombay," wrote the Reporter-General, "is principally produced in Malwa, and in the vicinity Ougein "(Ujain). That some small quantity of inferior quality is produced in the northern "parts of the Guzrat, and that it sometimes occurs that a small quantity of Turkey "opium is imported."

Letter from the Governor-General in Council to the Government of Bombay, dated 30th June 1803.

The Governor-General in Council then addressed the Government of Bombay pointing out that the extent to which the trade in opium from the western side of India (of which he was not before apprised) appeared to have already attained, and the detrimental consequences which might result from the increase or continuance of that trade to the revenue derived from the monopoly of opium in Bengal, required "that the most effectual measures should immediately be adopted for the prevention "of further growth of that commerce, and for its ultimate annihilation." The Bombay Government was accordingly requested to prohibit the cultivation of the poppy within the territories subject to its immediate authority, and also to prohibit the import into Bombay, or the shipment at British or foreign ports in vessels sailing under the British flag, of any opium except that purchased at the Company's sales in Bengal, and to state its opinion as to the best means of preventing the cultivation of the poppy in the territories of the Baroda State and any of the neighbouring countries, and the export of opium from those countries. A report was also asked for regarding the origin and progress of the trade in opium from the West of India, the persons concerned in it, the price of the opium, and the markets to which it was ultimately consigned for sale.

The intention of the Government of India to request the Government of Fort St. George and his Excellency the Governor of Ceylon to prohibit the cultivation of the poppy, and to restrict the trade in opium within their jurisdiction, was at the same time incidentally mentioned.

Letter from the Government of Bombay to the Governor-General in Council, dated 2nd Aug. 1803.

On receipt of this letter, the Bombay Government* directed the Collector of Surat and the Resident at Baroda to prohibit the cultivation of the poppy in the Company's territories under their charge, and to state their opinions as to the best means of prohibiting poppy cultivation in, and the export of opium from, the territories of the Gaekwar and from any of the neighbouring countries. The Resident was also asked to prohibit the export of opium from the Company's ports of Dhollerah and Gogho, and to write to the Nawab of Cambay through the Political Officer to take similar precautions. The Custom Masters at Bombay and Surat were at the same time directed to only permit in future the export of Bengal opium, and to caution vessels sailing under the British flag not to receive any other opium. Reports also as to the origin of the trade and other particulars were called for from the above-named officers and Mr. Miguel de Lima de Souza, the Chief Local Administrative Official in Gogho, &c.

Letter dated 24th Aug. 1803, from the Resident to the Government of Bombay.

The Resident at Baroda in compliance with these orders instituted an inquiry, and reported the result on the 24th August 1803:—"It appears," he wrote, "from the "uniform declarations of the retailers and wholesale dealers in that article, and from "the information of many respectable inhabitants, as well as of the Civil Officers of "the Gaekwar's Government, that the poppy is not planted or cultivated in Guzerat "(Gujarat) for the purposes of profit or exportation. Here and there a few seeds

* The Bombay Government raised no objection to the prohibition of cultivation within the territory under their administration, as supposed by Sir James Lyall.

"may be sown in a private garden, and the produce consumed by the family, "but this practice is extremely rare. All the persons to whom I have applied for "information agree that Malwa is the country where the poppy is cultivated and "whence whatever quantities brought to market in Guzerat are imported. The "chief ports of exportation are Cambay, Jambooseer, Broach and Surat. The era "of cultivation, of this article in Malwa appears very remote, and to owe its "origin, like the cotton of this country, to a climate and soil favourable to the "growth of the plant. . . . The disturbed state of Malwa has caused the "cultivation of opium to decline, and consequently the exportation is less than "formerly. The means of exporting this drug are so easy that it will be very "difficult to prevent by any prohibitory regulations. It is carried away in small "vessels that can approach any part of the coast, and were they excluded from the "greater ports, the motive of smuggling is so strong that they would discover other "channels. A great quantity of opium is imported into Kathiawar with a view to "exportation principally to Arabia and Persia. This is also supposed to be the course "of a considerable proportion of the exports from other places. The rest find their "way to Bombay and the ports of the Konkan, from which the opium is distributed "into the interior of the Peninsula. None of the emporia that I have mentioned are "within the jurisdiction of the Gaekwar Government, and such is the universal and "strong passion for this deletrious manufacture that any attempt to reduce its con-"sumption in Guzerat would produce the greatest dissatisfaction. It is probably an "apprehension of this kind that has induced the Administration to levy comparatively "light dues on the home consumption of opium, while the petty States through whose "territories it passes from Malwa, not being restrained by this consideration, impose "heavy transit Customs."

Numerous persons in Guzerat (Gujarat) were said to be concerned in the trade, and dealers were reported to "run considerable risks in smuggling the commodity" to evade the heavy transit duties imposed upon it when on its way from Malwa to that Province.

Letter dated 16th Sept. 1803 to the Government of Bombay.

In a subsequent communication, the Resident forwarded extracts of letters, which he had received, from the Nawab of Cambay, the Managers of the port of Dhollerah and the Agents of the Company's districts under his charge at Dholka and Moondeh.

The Managers of Dhollerah reported that no opium had been exported from that port since the British flag had been there hoisted; and the Agents of the Company's districts reported that no poppy was there cultivated, and that the opium sold was brought from Malwa.

The reply from the Nawab was laconic:—"No opium," he wrote, "grows in this "country. In Malwa it is cultivated, and comes thence into Cambay and Kathiawar, "where its use is much indulged in. A very little is bought and brought here, and it "would avail little to forbid its ingress."

Letter from the Collector of Surat to the Government of Bombay, dated 26th Sept. 1803.

The Collector of Surat reported on 26th September 1803, that the cultivation of the poppy had been strictly prohibited throughout his Collectorship, and that from the best information he had been able to obtain it did not appear that any opium was produced in the countries subject to the Gaekwar State. "From the information of "the oldest and most respectable merchants of this city," wrote the Collector, "as well "as from the Custom House records, which I have deemed it advisable to consult as "forming the only clue by which authentic intelligence could be deducible, it appears "that opium has been an article of traffic ever since Surat has been a place of trade "from time immemorial."

Letters dated 27th Aug. and 22nd Nov. 1803 from the Custom Masters at Surat and Bombay to the Government of Bombay.

The replies from the Custom Masters at Surat and Bombay, dated 27th August 1803 and 22nd November 1803, were also full and interesting. "The merchants of Surat," wrote the former, "have traded in opium ever since it became a place of trade, and "from the information of some of the oldest traders they believe it has not increased "or decreased in any considerable degree until within the last 18 or 20 years, when it "increased a little owing, it appears, to a greater number of strangers repairing hence "for Malwa opium from Bhaunagar, Diu, Cutch, Malabar, Prince of Wales Island, the "Malay Coast, and China. . . . The persons concerned in this trade are Hindoos "of various sorts, Muhammadans, and a few Jews—in all 300 to 400 persons." Two kinds of opium were said to be imported, one from Malwa, and the other, which was the produce of Upper Egypt, from the ports in the Red Sea; the price of the Malwa opium on re-export from Surat being 5½ rupees per seer, and of the Egyptian 7½ to 8½. Malwa opium was, according to the Custom Master, consigned to Malabar and other

places in India, the Malay Coast, and China, while the Egyptian opium was re-exported to Multan (in the Punjab) and no other country.

The Bombay Custom Master reported that opium was produced in Malwa, Ujain being "the grand mart for all the opium produced in the different districts," where it was "purchased by all descriptions of merchants, with the only exception of Mussalmen." The quantity of opium annually brought to Ujain he estimated at 15 lakhs of rupees, of which 5 lakhs were exported to Hownabad (*sic*) in the Bounsella's (Bhonsla) country, about 3 lakhs to Poona, and one to two lakhs to Bombay, the remainder being distributed over the adjacent country and Gujarat for internal consumption and for exportation. "In regard to the origin of the trade in opium," wrote the Custom Master, "no certain information can be obtained from the Native "merchants, other than that it is a generally received opinion, that it has existed for "centuries back."

The conditions under which the cultivation was carried on in Malwa were thus described: "From the best information procurable, I do not find that in the Ougein "and surrounding districts the opium manufacture has ever become an object of "attention to the Government of those Parganahs, but that is indiscriminately subject "to the same taxes and duties as all other produce, and the trade equally open and "free to all. That there exists no sort of monopoly of farming thereof in any form, "or in regard to any quantity; that the cultivators of the land produce as much as "they think proper, and generally all bring it for first sale to Ougein."

Letter from Mr. de Souza dated 8th Aug. 1803 to the Government of Bombay.

Mr. de Souza's reply was rather vague, but the information, which he collected, was to the effect that the opium was produced in Malwa, and consumed all over Gujarat and other countries, about 1,500 or 2,000 Surat maunds being brought to Bombay.

Section 9 of Bombay Regulation I., of 1805.

The prohibition of the cultivation of the poppy throughout the Company's territory was followed by the enactment of provisions in Bombay Regulation I. of 1805, by which the export of opium from Bombay to China was forbidden, and only Bengal opium was permitted to be imported into, or exported from, Bombay on pain of forfeiture of the opium, and a fine of treble its value.

Précis of Correspondence in the Baroda Residency Office on the subject of our relations with H.H. the Gaekwar with regard to Opium, contained in the Proceedings of the Government of India in the Financial Department No. 28, of Feb. 1878; and Letter from the Court of Directors to the Governor General in Council, dated 9th April 1805.

Some action also appears to have been taken with the acquiescence of the Gaekwar, with whom the British Government was at that time in close political relations, to suppress poppy cultivation in Baroda and other Native States in Gujarat.

The Court of Directors, however, in a letter written on the 9th April 1805, expressed themselves doubtful as to the wisdom of the measures adopted for the prohibition of the cultivation of the poppy and the suppression of the trade in opium. "Considering," they wrote, "the drug as an article of almost universal consumption, the prohibiting "altogether the cultivation of the poppy within the territory under the immediate "authority of the Bombay Presidency appears to be a measure of severity, and "calculated likewise to render Government extremely unpopular, particularly in "Guzerat (Gujarat), in which Province it appears that the poppy is not planted or "cultivated for the purposes of profit or exportation, but for the consumption of "families." The policy of attempting to "at once annihilate" a trade which was said to have existed for centuries past was also regarded as questionable.

Letter from the Governor-General in Council to the Government of Bombay, dated 17th Oct. 1805.

In forwarding an extract from this letter to the Government of Bombay, the Hon. the Vice-President in Council, Sir George Barlow, in a letter dated 17th October 1805, expressed an opinion that it would be expedient to permit the cultivation of opium in Gujarat for the use of the inhabitants of that Province, as the quantity of opium there produced was reported to be inconsiderable, and to be intended "solely for the "use of the inhabitants and not for the purposes of exportation;" and requested "that this part of the subject" might be reconsidered.

The cultivation of the poppy in Baroda therefore was not interfered with, but the prohibition in British territory was maintained, and the policy of suppressing as far as possible the cultivation in other States, and of restricting the traffic in opium to the Portuguese Ports of Diu and Daman, by prevailing on the Native Princes to prohibit the export of opium from their ports, and to establish duties on the transit of the drug by land, appears to have been kept steadily in view.

Aitchison's Treaties, Vol. VI., pp. 338 to 341.

In pursuance of this policy the chiefs of the Mahi Kantha Political Agency were required to prevent opium smuggling through their territories, by Article XIII. of a Security Bond taken from them in the year 1812; and the export for sale of opium from the Gaekwar's districts to seaports or other territories was prohibited by the

Gaekwar's Government under an arrangement made in 1817. In 1818 also, a duty of 12 rupees per Surat ser was imposed by order of the Gaekwar's Government on the sale and transport of opium within the territory of the State.

Proceedings of the Government of India in the Financial Department, Nos. 18–30, of February 1878.

The Marquis Wellesley, moreover, aided doubtless by the course of events in Europe, succeeded in the early part of the century in effecting an arrangement with the Portuguese Viceroy at Goa, under which the export of opium from Portuguese ports was temporarily prohibited; but the understanding thus arrived at was of short duration. In 1815 Major Schuyler, the Envoy at Goa, reported to the Bombay Government that the Portuguese Viceroy of the time was rumoured to have declared the arrangement made by his predecessor unjust and ruinous to the revenue of his Sovereign and to the commerce of the Portuguese settlements on the coast, and that he (the Viceroy) had given a small brig of war to a certain Major Antonio Periera to enable him to transport 69 chests of opium, brought from Daman from Goa, to Macao for the China market. On receipt of this report the Company's Collectors and Custom Masters were directed by the Bombay Government to prevent, as far as possible, the passage of opium from Malwa through the Company's territories. In January 1817 also, the Governor-General in Council addressed the Court of Directors, representing the injury which the opium revenue was likely to sustain from the trade in opium between Goa and other ports in India, not subject to British jurisdiction, and the Portuguese settlement of Macao, and suggesting that an arrangement should be made between the Governments of Great Britain and Portugal for prohibition of the import by Portuguese subjects into Macao of all opium except Bengal opium, and for the imposition of such a duty on Malwa or Turkey opium, when imported by foreigners, tantamount to prohibition.

Letters from Maj. Schuyler Envoy at Goa, to the Government of Bombay, dated 8th and 9th May 1815, and paragraph 88 of Letter from the Court of Directors to the Governor-General in Council, dated 24th Oct. 1817.

Minutes of Proceedings of the Government of Bombay, dated 22nd May 1815.

The Court of Directors, however, thought it is so improbable that the Portuguese Government would accede to such an arrangement, that they deemed it "unnecessary "to submit the proposal to His Majesty's Government." In communicating this decision, however, the Directors expressed a hope that the superiority in quality of the Bengal opium over that manufactured in other parts of India would insure to it a preference in the foreign market, if the superiority were not more than counterbalanced by the difference in price. "Should," they wrote, "a reduction in the price "of Bengal opium become necessary, the expediency of proportionately increasing the "annual provision will naturally engage your attention. We know of no practicable "way of guarding against the evil you apprehend, except by supplying the markets, "at a moderate price, with a better article than can be procured from different quarters "and through other channels."

Letter from the Court of Directors to the Governor-General in Council in Bengal, dated 27th Jan. 1819 in App. IV. to the 3rd Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

From 1815, therefore, Malwa opium began to compete seriously with Bengal opium in the Eastern market, and a decline in the opium revenue from 1814–15 to 1817–18 was ascribed to the competition of Malwa, Turkish, and smuggled Bengal opium.

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In the Bengal Presidency, in the meantime, the prohibition of poppy cultivation in the province of Bengal was found to have been ineffectual; smuggling from Behar on an extensive scale was officially reported; and the existence of a strong demand for opium for local consumption within the Presidency was forced upon the notice of Government.

Letter from the Court of Directors to the Governor-General in Council in Bengal, dated 30th Jan. 1822, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

Letter from the Opium Agent in Behar, dated 21st Nov. 1814, referred to in para. 79 of letter from the Court of Directors to the Governor-General in Council, dated 24th Oct. 1817 in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The policy, therefore, which had been inaugurated by Warren Hastings, of regarding opium merely as an article of foreign commerce was abandoned, and opium was included with spirituous liquors and intoxicating hemp drugs as an article of the Provincial excise.

Regulation X. of 1813, which consolidated the rules at the time in force respecting the manufacture and sale of spirituous liquors and intoxicating drugs, authorised the retail sale of opium under license, on payment of a daily tax to Government. The retail sale was, however, to be confined to one or two of the principal towns in each district, and Collectors were enjoined to "discourage to the utmost extent of their means, the sale and consumption of the drug except for medicinal purposes." The quantity of opium required for internal consumption was to be supplied at 10 rupees per ser by the Opium Department, and the price realised was to be credited to the Department.

Section XVII., clause (3) of the Regulation.

These measures were followed by an attempt, in 1815, to collect, through the Commercial Resident of Rangpore, the produce of the poppy illicitly cultivated in

the Bengal districts of Rangpore and Dinagepore, but, although the area under poppy was estimated to be not less than 10,000 bigahs, the Resident was only able to procure 30 maunds of opium at a comparatively high cost.

An Opium Agency was accordingly established at Rangpore for the provision of opium for internal sale and consumption in the Presidency by Regulation XIII. of 1816; and the produce of the Behar and Benares Agencies was reserved exclusively for the export trade. By this Regulation the retail sale of opium in the interior was formally declared to be a branch of the Abkari revenue, and the superintendence of the sale was vested in the Board of Revenue, under rules similar to those established for the sale of spirituous liquors and hemp drugs.

Shops for the sale of excise opium were established by Government, in accordance with the provisions of the Regulation, at the places "deemed most convenient for "supplying the wants of the community;" and Collectors were also authorised in certain cases to permit individuals to establish shops in specified localities and sell excise opium under regular licenses and on payment of a daily tax, which was to be fixed as high as possible "without risk of giving rise to the illicit manufacture and sale of opium."

The Opium Department was, however, continued as before under the general authority of the Board of Trade, and, to improve the administration in respect to the provision of the drug, the number of European officers in the Department was increased, and the provisions of the law intended to prevent the illicit manufacture and sale of opium were made more stringent. The provisions of Regulation VI. of 1799, which governed the dealings of the officers of the Department with the cultivators, were, however, maintained with little material alteration.

Letter from the Governor-General in Council in Bengal to the Court of Directors, dated 20th Feb. 1816, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The principles, upon which the supervision of the arrangements for the internal sale of opium should be conducted, were thus laid down:—

> "The Board has also been informed that the rules for the conduct of the officers employed in managing the retail sale of the opium, should clearly define that the object of Government in interfering in the traffic was more with a view to control the use of an article, which is so prejudicial to the morals of the people, and to the interests of society in general, than with a desire of increasing the revenue by an extensive sale of it; and that the superior means which Government will in future possess of regulating and restricting the retail sale of opium, when conducted under the immediate superintendence of its own officers will, it is hoped, not only prevent illicit traffic in the article which now notoriously exists, but gradually reduce the excessive use of the drug, which is now known to prevail, the object of course being to confine the consumption of it to medicinal purposes."

Letter from the Court of Directors to the Governor General in Council Bengal, dated 24th Oct. 1817, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The Court of Directors, in conveying their sanction to "the measures adopted for the "purpose of supplying from the Government Stores a quantity of opium for the "internal consumption of the country," desired it to be distinctly understood that sanction was given to the measures, "not with a view to the revenue which they may "yield, but in the hope that they will tend to restrain the use of this pernicious drug; "and that the regulations for the internal sale of it will be so framed as to prevent its "introduction into districts where it is not used, and to limit its consumption in other "places as nearly as possible, to what may be absolutely necessary."

The establishment of the Rangpore Agency was approved, as the Directors considered it a fair object "to substitute an allowed, instead of an illegal, proceeding; to "restrain an evil which cannot be suppressed; to place under regulation a habit of "indulgence from which the people cannot be wholly weaned, and to employ taxation less as an instrument of raising the revenue than as a preservative of the "health and morals of the community."

After some practical directions as to the necessity for keeping and packing Bengal opium in such a way as would prevent it from being passed off in India and other countries as Behar or Benares opium, the Court of Directors concluded their letter with a second, and more explicit, declaration of their policy in regard to the sale of opium:—

> "After all, we must observe that it is our wish not to encourage the consumption of opium, but rather to lessen the use, or, more properly speaking, the abuse of the drug: and for this end, as well as for the purpose of revenue, to make the price to the public, both in our own and in foreign dominions as high as possible, having due regard to the effects of illicit trade in our own dominions, and of competition in foreign

places, from opium produced in other countries. Were it possible to prevent the use of the drug altogether, except strictly for the purpose of medicine, we would gladly do it in compassion to mankind; but this being absolutely impracticable we can only endeavour to regulate and palliate an evil which cannot be eradicated."

It is clear from these despatches that the policy of treating opium as an article of excise was adopted, mainly with the view of restricting consumption and of securing more complete control over the internal traffic in the drug, the revenue that might be obtained from a tax on its use being regarded as a secondary consideration.

In 1814 the East India Company's monopoly in the Indian trade was withdrawn by the Statute 53rd George III., chapter 155; and in 1815–16 Turkish opium was imported by merchants unconnected with the Company into both the Bengal and Bombay Presidencies. In Bengal legal proceedings were contemplated, though they were not actually taken; and in Bombay the importers, Messrs. Forbes & Co., were prosecuted for an infringement of the rules contained in Regulation 1 of 1805. The prosecution, however, failed, the Recorder holding that the absolute prohibition of import contained in the Regulation was invalid under the provisions of the Statute throwing open the trade to and from India to the public.

Letter from Governor-General in Council to the Court of Directors, dated 11th Oct. 1816. in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The reservation of the monopoly of the China trade, which was maintained by the Statute in question, enabled the Company to prevent vessels sailing under the British flag from carrying any opium to China, except that sold at the Company's public sales; and, in order to secure the exclusive trade in opium in India, a duty of 24 rupees per seer was imposed on all opium, other than that produced in Bengal, imported into the territories immediately dependent on the Presidency of Fort William, and of 12 rupees per Surat ser on such opium imported into the Presidency of Bombay, by Bengal Regulation XVI. of 1817, and Bombay Regulation I. of 1818.

Letter from the Governor-General in Council in Bengal to the Court of Directors, dated 11th Oct. 1816.

In submitting for approval to the Court of Directors a draft of the above Bombay Regulation in 1816, the Bombay Government was compelled to recommend the exemption of Gujarat from the provisions permitting the import and consumption of Bengal opium only on account of the extensive consumption of opium which existed in that Province. "Your Honourable Committee are aware," wrote the Governor in Council, "that from "the high price at which opium is sold at the public sales in Calcutta, the purchasers "cannot afford to bring it round to this side of India, and our territories to the south-"ward have therefore been supplied with that article from Malwa. As your subjects "in Gujarat indulge in opium so as to render it quite a necessary of life, and as no "supply of the article can be expected from Bengal, we must still admit of opium, the "produce of Malwa, finding its way into Gujarat, which may be done by an Order in "Council, authorising the Collectors to waive the strict operation of the Regulation in "favour of that description of opium, without providing for any exception in its "favour in the proposed enactment."

Letter from the Government of Bombay to the Court of Directors, dated 11th Dec. 1816.

The exemption of opium imported into Gujarat from duty was not, however, long maintained, as it was found to lead to the illicit export of opium, and in 1820 the Government of Bombay decided to discontinue it, and to supply opium itself to licensed vendors for retail in the Company's territory in Gujarat in accordance with the provisions of Regulation VII. of 1817, a Regulation for licensing the sale of tobacco, ganja, and snuff, and preventing their clandestine importation. The object in view, as explained to His Highness the Gaekwar of Baroda was "to retail opium at "rates that would check the inordinate use of it, and yet, besides a profit to the retailer, "be within the reach of those who may be accustomed to indulge in opium and at "the same time yield a revenue."

Letter from the Secretary to Government of Bombay to the acting Resident at Baroda. No. 1031, dated 16th Aug. 1820, in the proceedings of the Government of India in the Financial Department, No. 22 of February 1878.

In 1819 it was found desirable to modify the constitution of the Boards entrusted with the supervision of the revenues of the Bengal Presidency, and unite under one authority the control of the Departments of Customs, Salt, and Opium. A new Board was accordingly constituted by Regulation IV. of 1819, entitled the Board of Revenue in the Customs, Salt, and Opium Departments, and the "powers, duties, and authority" exercised by the Board of Trade in the Opium Department were vested in the new Board.

Bengal Regulation No. IV. of 1819.

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The measures taken to exclude Turkey opium from India, and prevent vessels under the British flag from trading with China in opium other than that sold at the Calcutta sales, appear to have been successful, but it was impossible to prevent a trade in such opium with the Eastern Isles and China in the ships of foreign nations and from foreign ports; and the establishment of British supremacy in Malwa, and the

Par. 9 of letter from the Court of Directors to the Governor-General in Council, dated 10th May 1816, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

pacification of the country consequent on the termination of the Pindari war, led naturally to a large increase in the out turn and export of the Malwa drug.

Abstract of correspondence regarding Malwa opium from 1818 to 1828, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

In 1818, therefore, the Government of India consulted the Bombay Government as to the best method of checking the exportation of Malwa opium from the Portuguese ports of Diu and Daman. In reply the Bombay Government suggested that cultivation of the poppy for the purpose of export should be prohibited in Malwa; or, if this were thought impracticable, that cultivation which had been prohibited in Gujarat in 1803 should be once more permitted, so that Gujarat opium might compete with the Malwa drug in the Eastern markets.

Resolution of 12th Nov. 1819, in Abstract of correspondence regarding Malwa opium from 1818 to 1828.

In 1819 the Government of India discussed the subject in a Resolution. The competition of Turkey opium in the Chinese markets was not thought to be serious, provided that the price of Bengal opium were not kept too high, but the demand for Malwa opium in China made, it was considered, the maintenance of the high prices up to that time obtained for Bengal opium an impossibility. A project therefore was formulated for securing the entire control of the China market, by obtaining in Malwa a supply of opium that would suffice, with the opium already produced in Bengal, to meet the total demand. The Bengal supply was calculated as 4,000 chests, and the demand was estimated at 8,100 chests, and the objects in view were firstly to obtain a supply of 4,000 chests from Malwa, and secondly to prevent by restrictive measures the production of any quantity of opium in excess of that supply. Objections to the scheme as an improper interference with the affairs of Native States, and the course of trade, and as being likely to render our Government unpopular, were recognised, and it was left to the Bombay Government to propose measures which would obviate these objections.

Abstract of correspondence regarding Malwa opium and par. 4 of letter from the Court of Directors to the Governor General in Council in Bengal, dated 16th Sept. 1829, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

Eventually the idea of restricting the quantity of opium produced in Malwa was temporarily relinquished, and a scheme for the purchase there of the amount of opium required without interference with the production was adopted; and the opium thus obtained was sold partly at Calcutta, and partly at Bombay, by the Government upon principles similar to those which regulated the Bengal sales, the first sales at Bombay under this system being in the year 1820–21.

At the same time Bombay Government Regulation I., of 1818, was followed by Regulation II, of 1820, a Regulation for explaining Regulation I, of 1818, and for the more effectually preventing the clandestine importation of opium into any port or place within the limits of the territories dependent on the Bombay Presidency; and the policy of restricting the cultivation of the poppy in the Native States of Gujarat, and the transit of opium through these States to the ports on the west coast was vigorously prosecuted.

Aitchison's Treaties, Vol. VI., pp. 163 and 164; and letter from the Government of Bombay to the Acting Resident of Baroda, dated 16th August 1820.

In Baroda the Gaekwar was informed in July 1820 of the decision, which had been arrived at, to prohibit the importation of opium into British Gujarat, except on payment of the duty prescribed in Bombay Regulation I. of 1818, and to supply opium for sale by licensed vendors for local consumption, and was invited to adopt similar measures within the territory of his State. Negotiations followed; the Gaekwar accepted the policy of Government with certain stipulations, and these stipulations received the assent of the Government of Bombay on October 17th, 1820. By this Convention the British Government agreed to make no objection to the cultivation of the poppy and the manufacture of opium in the Baroda State to an extent sufficient to provide for local consumption, and the Gaekwar undertook to purchase the local produce, and to supply opium to the merchants and subjects of the State. Any opium required for this purpose in addition to the local produce was to be obtained from the warehouses of the British Government in the districts adjoining the State, and in the event of a deficiency of supply in the warehouses of the two Governments the import of opium free of duty from Malwa was to be permitted. The sale price of opium also in Baroda was to be assimilated to the price in British territory.

Aitchison's Treaties, Vol. VI., pp. 232 to 237.

In Kathiawar, on the assumption by the British Government of supreme authority in the same year, the transit of opium not covered by a pass from the British Government was prohibited, and the Chiefs engaged to procure all opium required for consumption in their respective talukas from a store maintained by the British Government, to regulate the retail sale, and to treat as contraband all opium not so procured which might be found in their territories.

Aitchison's Treaties, Vol. VI., pp. 307 and 308.

In 1822 the Diwan of Palanpur and Deesa, and a number of petty Chiefs in the Palanpur Political Agency and the Chief of Danta, now under the Mahi Kantha Agency, entered into engagements to prevent the passage of opium through their

territories. The Chiefs of the Mahi Kantha were, as has been already noticed, under an obligation to prevent opium smuggling through their territories as early as 1812, and in 1821 seven of the Chiefs further bound themselves to allow no trade in opium except that regulated by the orders of the British Government. The Chiefs and inhabitants of a number of villages in the Megraj Taluka also bound themselves about the same time to attend to the regulations of Government regarding opium in every respect.

Aitchison's Treaties, Vol. VI., pp. 366 and 367.

In the Rewa Kantha the Chief of Balasinore agreed in 1820 to regulate the import of opium into his territory in accordance with Bombay Regulations 1 of 1818 and 11 of 1820, to procure opium for internal consumption from a depôt prescribed by the British Government, and to regulate the retail sale of it in accordance with the rules in force in British territory. In 1822 the Raja of Chota Udaipur agreed to prevent the smuggling of opium not covered by a pass, and to seize and dispose of smuggled opium in accordance with the orders of the British Government; and in 1823 the Raja of Rajpipla, the most important State in the Agency, agreed to abide by any orders issued by the British Government in regard to opium, and to seize all opium clandestinely conveyed through his dominions.

Aitchison's Treaties, Vol. VI., pp. 411, 412, 401 and 397.

No agreements appear to have been made with the States of Cutch and Cambay.

No special agency was at first appointed to purchase opium in Malwa. According to the original scheme, purchases were to be made by political officers under the orders and subject to the approbation of the Government of Bombay, and the importation into the Company's territories of any opium other than that which was brought on the Company's account to the appointed purchasing stations was prohibited, and such opium on seizure was made liable to confiscation. This scheme proved a failure, and in April 1821 Sir John Malcolm, who was at that time in political charge of the Native States in Malwa, proposed that an Opium Agent should be appointed either in Malwa or at Baroda to deal direct with the proprietors of opium, whether ryots, farmers, or merchants, and to purchase opium on the best terms obtainable.

Par. 65 of letter from the Court of Directors to the Governor-General in Council, dated 30th Jan. 1822.

Précis of correspondence regarding opium in Native States, by Mr. Crawford, 1884.

The Agent was to be subject to the general control of the political authority of the Province, but the latter was not to interfere further with his concerns than to give him all the aid that he could to promote their success.

Sir John Malcolm, however, appears to have had some misgivings as to the results of the policy upon which Government had decided to embark. "That our extension," he wrote, "of the monopoly of opium to Central India will be attended with considerable "trouble, and that it will, from the immunities we may require, and the connexion "with managers and others to which it may lead, give rise to much annoyance and "general jealousy and bad feeling, is not to be doubted. It will, and indeed has "already made an impression not favourable to our interests."

Par. 41 of letter from the Court of Directors to the Governor-General in Council in Bengal, dated 11th July 1827, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The Bombay Government and the Government of India approved of the proposal for the appointment of a special purchasing agent, and Mr. Taylor was accordingly appointed by the Bombay Government to be Deputy Opium Agent in Malwa.

The right of the Native States to levy transit duties on opium purchased by the British Agent was at the same time expressly recognised, and defined by the Bombay Government in the following terms: "The Government does not contemplate any "demand of concessions or indulgences regarding remission of duties upon the opium "hitherto established by the Native States through which it may have to pass. It "is expedient, however, that they be accurately defined, and that they shall not be "increased hereafter either on the transit or on the cultivation of opium. It will also "be the duty of the Agent to transport his purchases by that route which may afford "the greatest facilities and immunities."

Mr. Crawford's Précis, p. 2.

A letter from the Bombay Government, dated 14th December 1821, described the route then taken for conveying smuggled Malwa opium to the Ports of Diu and Daman. It was conveyed from Malwa to Pali in Marwar, thence to Jeysalmer, thence to the Port of Kurrachee in Sind, and from there by ship to Daman.

Abstract of correspondence regarding Malwa opium from 1818 to 1828.

In January 1822 the Court of Directors reviewed exhaustively the circumstances of the opium trade. It was, in the opinion of the Court, sufficiently established that the demand for opium in the Eastern market had recently considerably increased, and that the Company's opium was preferred to every other variety: but its price placed it out of the reach of the poorer classes of consumers, and encouraged the competition of other opium, while the quantity exported was insufficient to supply the entire market. The principles of a strict monopoly which pre-supposed the exclusive possession of the market, were, therefore, admitted to be inapplicable, and the necessity for some change

Letter to the Governor-General in Council from the Court of Directors, dated 30th Jan. 1822, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

of system was recognised and accepted. The smuggling from Bengal was regretfully referred to as an "evil of serious magnitude," but the competition either of illicit Bengal or of Turkey opium was not regarded as so serious a matter as the competition of opium from Malwa. "The importation," wrote the Directors, "of Turkey opium into China is "stated to be as (old as) the earliest period of European commerce with that country, "though it at first took place in very small quantities. Previously to the agency system, "the Turkey opium was on a par with or not much lower than the Bengal." Opium of this class was described as very inferior and much adulterated, and was said to be conveyed to China and the Malay Coast direct from the Mediterranean, principally by Americans and by British ships from Madeira. The Directors, therefore, though doubtful as to the possibility of underselling or completely preventing the sale of this opium, were of opinion that "the Company's opium, if supplied of the standard "quality of 1798, would command over the Turkey opium in the Eastern market "a preference sufficiently decided to ensure a large profit on a supply nearly "commensurate with the entire demand of the market."

The Malwa opium they regarded as a more formidable rival owing to its quality "approaching and sometimes surpassing the quality of that of Behar." Suppression of the trade in this opium either by underselling it or by putting a better article in the market was held to be impracticable, and the prohibitory Regulations which had been designed to prevent its export were said to have been "reluctantly adopted by the Native Governments," to have been "attended in their operation with the most serious "hardships to the monied, agricultural and mercantile classes," while their success unaided was, to say the least of it, doubtful.

The scheme therefore of purchasing opium in Malwa to enable Government to supply a quantity sufficient to command the Eastern market, though open in the opinion of the Directors to many objections, was approved "as a measure of justice" and as the "only compensation that could be offered for the injury sustained by the people from "the operation of the prohibitory Regulations." If, as they said, "those Regulations had "been abolished, the open competition of the Malwa drug would have destroyed our "opium revenue. If they had been continued without the alleviation of the present "measure, they would have continued to produce the greatest hardships to the people, "and could only have been rendered effectual at an enormous expense in establishments "and by means which Government could not pursue without a just impeachment of its "equity."

Abstract of correspondence regarding Malwa opium, from 1818 to 1828.

The scheme of purchasing annually 4,000 chests of Malwa opium was accordingly discussed, and finally decided on by the Governor-General in Council in a Resolution in September 1822, and the principles which should regulate the purchases were authoritatively laid down. The Agent, it was observed, ought never to buy opium which was not likely otherwise to come into competition with the public sales, and ought never to give such a price as the private merchant could not afford.

Mr. Taylor's purchases, however, were not regulated by these principles. He appears to have bought recklessly and to have managed his money matters injudiciously, and he also made suggestions which were considered to be unnecessary as to the expediency of indemnifying the Native Chiefs for the losses they sustained on account of the export of opium being prevented.

Resolution of the Governor-General in Council, dated 27th June 1828, in Abstract of Correspondence regarding Malwa opium from 1818 to 1828.

In June 1823, therefore, the management of the opium business in Malwa was taken out of the hands of the Bombay Government and the office of Opium Agent was entrusted to a Bengal Civilian. In the Resolution announcing this decision the Governor-General observed, that though it had been declared in 1819 that the principles of a strict monopoly could no longer be followed, it was never designed to intimate that the opium concerns were to be conducted according to the maxims of a free trade; and that as long as the existing system of a "modified monopoly" was retained, it was desirable that the opium business in Malwa and in Bengal should be conducted as one concern under the control of the Supreme Government.

Mr. Samuel Swinton was the Bengal Civilian appointed to the charge of the Malwa Agency.

Note by Mr. Holt Mackenzie, dated 18th July 1823, and Abstract of Correspondence regarding Malwa opium from 1818 to 1828.

At the same time, the necessity for reversion to the principles that were in favour when the Resolution was first taken to purchase and sell Malwa opium on account of Government, was advocated by the Secretary to the Supreme Government, Mr. Holt Mackenzie. The existing system, as he pointed out, left the cultivation of the poppy and the inland transit of opium free and uncontrolled, and some check to the competition of individual traders was, in his opinion, required. "If," as he wrote, "some arrangement for shackling the trade in Malwa opium be not adopted, I confess

"I see little chance of our being able to prevent such a fall in price from a superabundant "supply as will render the possession of the monopoly in Behar and Benares of little "value."

The establishment of a restrictive system in Malwa was accordingly recommended, and to enable Government to effect this, Mr. Mackenzie proposed that the Native Princes should be given a "distinct and powerful influence in the monopoly" in the form of a "share in the net receipts," which would induce them to prevent undue extension of the cultivation and illicit dealings in the opium.

Letter from Mr. Mackenzie to Mr. Swinton, dated 20th April 1824, in Abstract of correspondence regarding Malwa opium, from 1818 to 1828.

The futility of an attempt to control the Eastern market by a system of free purchase in Malwa was by this time apparent, and Mr. Mackenzie's note led to a change in the policy of Government, and to the adoption of measures to restrict the cultivation of the poppy and to establish a Government monopoly of the purchase for export of opium produced throughout Central India. In 1824 the necessity of interesting the different Chiefs in our monopoly, so as to impede the operations of private capitalists, was impressed upon the Opium Agent, Mr. Swinton; and steps were taken to carry the new policy into practical effect.

Evidence of Mr. Swinton before the Select Committee of the House of Lords upon the affairs of the East India Company in 1830.

As a purchaser of the opium, Government had naturally an object in securing it as free from adulteration as possible, and Mr. Swinton appears to have devoted his attention to the improvement of the quality of the drug brought to market, but the measures taken were mainly of a restrictive character.

Abstract of correspondence regarding Malwa opium, from 1818 to 1828.

The natural route of the opium to the west coast lay through Udaipur, and in July 1824, the Political Agent of that State was instructed to make the best arrangement practicable with the State for the prevention of the export of opium. In pursuance of these instructions the Political Agent, Captain Cobbe, negotiated a treaty with the Maharana in October 1824, by which the Maharana bound himself, in consideration of a cash compensation of Rupees 40,000, to prevent the sale and transit of opium through his dominions; to confine opium provided for internal consumption to the purpose for which it was supplied; and to agree to the confiscation of all unlicensed opium. Opium required for local consumption was to be supplied by the Political Agent, and in order to prevent disputes, or imputation of connivance on the part of the State officers, the Agent was to have control of all arrangements and checks necessary to the fulfilment of the treaty. A copy of the treaty was forwarded to and approved by the Government of India; the Political Agent was directed to enforce its performance; and instructions were issued to the Resident at Indore, to conclude treaties calculated to secure the objects in view with the different Chiefs under his authority.

Abstract correspondence regarding Malwa opium, from 1818 to 1828.

In accordance with these instructions, treaties providing for the supply of a specified quantity of opium at a fixed price, for restriction of the area under poppy, and for the prohibition of the export of opium not having the sanction of the British authorities, were negotiated with the States of Kotah, Amjhera, Indore, Dhar, Diwas, Ratlam, Sailana and Sitamau. Treaties similar to that concluded with the State of Udaipur for prevention of the transit of opium appear to have also been concluded with Bundi and other States. The States of Gwalior, Bhopal, Kishengarh, and Jeypore were, however, unwilling to enter into any engagements.

Before confirmation of the treaties the Resident at Delhi, Sir C. Metcalfe, in a letter dated 9th February 1827, submitted a remonstrance from the Kotah Darbar against the system that had been adopted. Persons of all ranks were, it was said, exposed to a search for opium on leaving the city of Kotah, and the people were in consequence discontented, while the system had caused a loss of 60,000 Rupees to the Raj Rana, and had interfered with the trade of the country. In another letter of the same date Sir C. Metcalfe expressed his conviction that the treaties concluded with some of the Native States in Rajputana had been procured by an "improper exertion of our "irresistible influence; that such measures were alike detrimental to the people and to "the princes and must ultimately be so to us;" and recommended that we should "resign our pecuniary profits rather than forfeit our name and reputation."

Abstract of correspondence regarding Malwa opium, from 1818 to 1828.

In February 1827 a further representation was made by the Kotah Darbar, asking to be released from part of the agreement referring to a tract held in farm from Maharaja Sindia, as Sindia had not agreed to co-operate in the restrictive measures.

In consequence of these complaints the Governor-General addressed Mr. Wellesley, the Resident at Indore, requiring from him and the opium agent conjointly specific information in regard to the objections urged against the system which had been adopted.

Pol. Cons. 22nd June 1827. Abstract of

The Resident at Indore and the Opium Agent in reply defended the treaties which had, they said, been readily entered into without the exertion of any extraordinary

Correspondence regarding Malwa opium, from 1818 to 1828.

influence, and were injurious to and unpopular with the traders alone. The price paid for the opium was, they said, fair and liberal; the evils supposed to result from searches for opium was denied; and the small extent of the trade in Malwa opium before the establishment of our supremacy in Malwa was relied on as a justification of our interference.

Letter from the Deputy Secretary to Government in attendance upon the Governor-General to G. Wellesley, Esq., Resident at Indore, dated 18th April 1827.

The objections raised by the Kotah Rana and Sir C. Metcalfe were held to have been sufficiently answered by these replies; and in April 1827 the Governor-General in Council (Lord Amherst) decided to persevere with the restrictive policy. The existence of discontent among the trading class owing to a diminition of the high profits from opium which they had temporarily received, was recognised as possible; but the fact that the developement of the Malwa trade in the drug "to any great and particularly profitable extent" was of very recent origin and was the result of the pacification of Central India by British arms and treasure, was considered to be a sufficient justification of an artificial restriction of their commercial dealings; while the system in force was held to be the most fair and equitable that could be adopted, unless the British Government was prepared to relinquish all restrictive measures and to abandon consequently a revenue of nearly a million sterling. The treaties concluded by the Resident of Indore with the States of Indore, Dhar, Diwas, Amjhera, Ratlam, Sailana, and Sitamau were accordingly confirmed and sanctioned: the Political Agent at Bhopal was instructed to enter into negotiations with the States under his control for the acquisition of the necessary command over the growth of opium in Eastern Malwa and the export of the drug by that route; and the Political Agent at Kotah was authorised to negotiate afresh with the Raj Rana, leaving it optional with him to confirm his engagements or not as he pleased. The Resident at Gwahor also was directed to make another attempt to procure the accession of the Court of Gwalior to the general scheme for limiting the growth and restricting the export of Malwa opium.

Aitchison's Treaties, 3rd edition, vol. IV. pages 174 to 176.

The treaties entered into with Indore, Dhar and other opium producing States in Malwa are said to have been almost identical in terms; and a copy of the Indore treaty, which is published as a specimen in Aitchison's Treaties is here reproduced for facility of reference.

SUBSTANCE of an ENGAGEMENT in PERSIAN between the BRITISH GOVERNMENT and MAHARAJAH HOLKAR'S GOVERNMENT regarding Opium, dated 18th February 1826.

ARTICLE 1.

The British Government engages to take annually from Maharajah Holkar's Government 5,000 Surat maunds of pure opium in cakes, each maund consisting of four punseerees and each punseeree weighing 401 Oujein Halee rupees or 91 new and 407 old Furrackabad Kuldar rupees, and to pay for the same at the rate of 30 Furrackabad Kuldar or Oujein Halee rupees. If a higher price than this should be given for purchases from others, the Maharajah's Government shall be entitled to a similar price. The said quantity to be delivered and weighed in all November at the Honourable Company's godowns at Indore or Mahidpore as may be desired by the Company's Opium Agent. Whatever quantities the Opium Agent or his deputies may object to as adulterated, damp, or otherwise faulty, shall not be taken, but pure and prime opium, such as the Agent is in the practice of purchasing from the merchants of Malwa, shall be taken.

ARTICLE 2.

The British Government will pay the Maharajah's Government for the opium as above stipulated in three equal instalments, the first on the 1st January, the second on the 1st of March, and the third as soon as the opium has been delivered and weighed.

ARTICLE 3.

The Maharajah's Government engages to confine the cultivation of the poppy in his territories within an extent calculated to yield a quantity not exceeding in any year 6,000 Surat maunds of dry opium. Of this produce 5,000 maunds are to be delivered to the British Government, and the remainder to be appropriated by the Maharajah's Government for necessary purposes.

ARTICLE 4.

If a diminution should take place in the cultivation of the poppy within the Maharajah's territories, or the crops be damaged by inclemency of weather, and the

Maharajah's Government finds itself in consequence unable to complete the stipulated quantity of 5,000 maunds from the produce of its own territories, and the same should be made clearly manifest to the Company's Opium Agent, in such case, and provided the Opium Agent should be able to make purchases in the Malwa markets at rupees 30 per punseeree, the Maharajah's Government will complete the stipulated quantity by purchases in the markets. But if the Opium Agent should be unable to purchase in the markets at that price, then the Maharajah's Government will not be required to to make up the deficiency, notwithstanding which the British Government will gratuitously, in consideration of the intimate union subsisting between the two Governments make up to the Maharajah's Government the difference to the full price of 5,000 maunds at rupees 30 the punseeree as stated in the First Article.

### Article 5.

The Maharajah's Government engages to prevent to the best of its power the exportation of opium from his territories not having the sanction of the British authorities, and to confine the sale of opium for internal consumption in his territories to vendors under its license. Any quantities passing in or out that may be stopped of their own motion by the officers and agents of the Maharajah's Government shall be delivered over to the Company's Opium Agent, and the Maharajah's Government shall receive two thirds of the value of the same rated at rupees 30 per punseeree, or less in property (proportion?) to its quality if of inferior quality. The British authorities moreover shall be at liberty to cause to be stopped and to appropriate any opium herein prohibited which they may discover passing to and fro in the Maharajah's territories, and for all such the Maharajah's Government shall receive one third of the value rated according to the quality as above stated.

### Article 6.

The British Government being anxious that the Maharajah's Government should sustain no loss from this arrangement whether in transit collections or otherwise, but on the contrary being desirous of obliging and benefiting it, agrees to give it at the end of the year in addition to the price of the opium as settled in the first article a bonus of rupees five per punseeree on the quantity therein stated provided it shall have observed faithfully the conditions of this engagement.

### Article 7.

This engagement shall hold good as long as the British Government may deem it expedient to maintain special arrangements for the control of Malwa opium.

This engagement consisting of seven Articles, is settled at Indore this 18th day of February 1826, A.D., corresponding with the 10th of Rujub 1241 Hegira and the 11th of Magh Soodee 1882 Sumbut, by Mr. Gerald Wellesley, Resident, &c. on the part of the British Government, and Etul Punt Tantea Jogh, &c., on the part of the Maharajah's Government, and in confirmation thereof counterparts, ratified with the seal and signatures of the Governor-General in Council and the Maharajah shall be exchanged between the contracting parties.

In the meantime Mr. Mackenzie's note of 10th July 1823 reached the Court of Directors and the scheme recommended was regarded by them as impracticable. "To prevent," wrote the Court, "clandestine cultivation through such an extent of country "as Central India in which the machinery of our Government is very imperfectly and "in some places not at all introduced, and to obtain a faithful execution of any compact "for that purpose which the Native Chieftains may enter into with the British "Government, appears to us still more difficult than the other expedients which have so "imperfectly answered your expectations. The unfavourable impression on the mind "of the people, which we are informed by Sir John Malcolm has been the effect of our "endeavour even to monopolise the produce must be still greater if the monopoly and "limitation of the manufacture is attempted."

Letter from the Court of Directors to the Governor-General in Council, dated 11th July 1827 in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

Sir C. Metcalfe also was not prepared to rest content with the decision arrived at. In September 1827, the Political Agent at Udaipur applied for an enlargement of his preventive service to enable him to effectually prevent the transit of opium through the State. The application was supported by the Opium Agent but was objected to by Sir C. Metcalfe who was then Member of Council, and who took the opportunity to repeat his objections to the existing system. The exercise by the Political Agent of

Abstract of correspondence regarding Malwa opium from 1818 to 1828.

the powers of search and interference was, in his opinion, unjustifiable as injuriously affecting the sovereignty of the Maharana of Udaipur in his own dominions, and a revision of the whole system was necessary. "Being," he wrote, "strongly persuaded "that our measures for the establishment of a monopoly of opium in our favour in foreign "States have excited great disgust and alarm; that they are oppressive and unwarrantable; "that they are carried into effect solely by our irresistible influence in opposition generally "to the interests and wishes of the princes who have subscribed to them and universally "to those of the people; that they injure our reputation and they weaken our Empire "by the disaffection which they excite or aggravate, I am naturally most anxious to see "these measures revised." He proposed therefore that a thorough enquiry should be instituted for the purpose of ascertaining the feelings which did exist upon the subject.

Abstract of correspondence regarding Malwa opium, from 1818 to 1828 and copy of Minute, by Sir C. Metcalfe.

The proposal for enquiry was supported by another Member of Council, Mr. Bayley, but the Governor-General, Lord Amherst, was unwilling to abandon the arrangements which had been adopted. "I have not yet," he wrote, "divested myself of the belief "that whatever degree of discontent prevails in the Malwa State is confined to the "Soucars, and is not seriously felt by either Prince or people."

Abstract of correspondence regarding Malwa opium from 1818 to 1828, and copy of Minute by the Governor-General, dated 1st Dec. 1827.

A letter from the Political Agent, Harauti, dated 27th January 1828, reporting the occurrence of an affray between opium smugglers and the Raja's troops in the State of Bundi, in which a relative of the Raja's was killed, gave Sir C. Metcalfe another opportunity for pressing his views upon the Government, and on 21st March 1828 Mr. Bayley, who was then acting as Governor-General, decided to institute an enquiry. Circular instructions were accordingly issued to all Political Officers in Rajputana and Malwa calling upon them to state candidly and unreservedly their observations and reflections upon the whole subject.

Abstract of correspondence regarding Malwa opium from 1818 to 1828.

Mr. Wellesley, the Resident at Indore, adhered to the opinions which he had already expressed, and Captain Cobbe, who as Political Agent in Udaipur had negotiated the treaty with the Maharana, and one or two other officers defended the system, but the majority of the officers consulted were strongly adverse to it. Sir E. Colebrooke, who had succeeded Sir C. Metcalfe as Resident at Delhi, entirely concurred in his predecessors opinions, and Mr. Clerk, the officiating Political Agent at Jaipur, reported that the Jaipur Darbar "exult" and triumph in being exempt from the opium engagements which are considered to have been enforced on neighbouring states in violation of their independence. The Kishengarh Raja, on the other hand, who had declined to enter into any engagement, was reported to be well pleased with the arrangements as his country had become a grand emporium for the drug. The unwillingness of Maharaja Scindia to enter into any agreement with the British Government on the subject of opium was referred to by more than one officer as being fatal to the complete success of the restrictive system. The State of Bhopal also was reported to be adverse to the treaties on account of their mercantile character.

The reply from the Resident at Gwalior shows that the negociations with the Gwalior Darbar on the subject of the proposed treaty had made no progress, as the Darbar intimated that they would expect more favourable stipulations than had been made with other States, and objected to agree to any provisions authorising seizures of opium by British authorities within the limits of the State.

Resolution of the Governor-General in Council in the Political Department, dated 19th June 1829, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

The replies received convinced the Governor-General in Council (Lord William Bentinck) that a change of policy was required, and the system of restriction on the production, export, and transit of opium in Malwa was accordingly abandoned.

The decision of Government was announced in a Resolution in the following terms:—
"Although some difference of opinion exists among the authorities employed in Malwa "and Rajputana regarding the practical effect of the opium treaties upon the "prosperity of the country at large and the feelings with which they are viewed by "the Native Princes; the general tenor of the evidence now before Government leads "irresistibly to the inference that evils of a very serious nature are inflicted by our "monopoly system in Central India on all who fall within the sphere of its operation. "It has been found altogether impracticable to enforce that part of the original "scheme which contemplated a positive reduction of the quantity of the poppy cultiva- "tion, and we have already therefore determined to abstain from any direct inter- "ference with the production of the article and have instructed the local authorities "accordingly."

"Nearly all our agents concur in representing that our measures for controlling the "transit and exportation of Malwa opium are vexatious and oppressive to the people.

"unpalatable and offensive to their rulers; whilst we have abundant proof of their "imperfect efficacy in the continually increasing prevalence of smuggling, and the yearly "augmentation of the export of the drug from Diu and Daman to the China market. "The intervention of Sindia's scattered and extensive possessions, which it has been "found impossible to include in the general arrangement, would alone defeat our hopes "of preventing the escape of contraband opium in considerable quantities from Central "India. And further the temptations to smuggling are so powerful, the pursuit of the "illicit traffic is so congenial to the tastes and habits of the wild tribes and dissolute "adventurers who abound in Malwa, and the public sentiment is necessarily so hostile "to our monopoly, that it may reasonably be doubted whether the Native States, how-"ever well disposed to co-operate and anxious to fulfil their engagements, are strong "enough to carry the system into complete effect either with or without the constant "and minute interference of our local agents. In the meantime, there is reason to "fear that the repeated and desperate efforts made to pass the opium beyond the limits "of our restrictions by large armed bands of smugglers, and their open systematic "defiance of the local authorities whilst engaged in the enterprise are operating to "demoralise and disorganise the country, and to revive the ferocious and turbulent "habits of the Meenahs and other uncivilised tribes in a degree which demands the most "serious consideration. . . . . Impressed with this view of the subject, and being "quite unable to devise any middle course of procedure, which affords the promise of "satisfactory results, his Lordship in Council cannot avoid the conclusion that we are "bound by paramount considerations of justice and good faith to withdraw altogether "from interference with the growth and transit of opium throughout Central India, "confining our restrictions upon exportation to our own territories and to Guzerat, "Kattywar (Kathiawar), and Cutch, where the prohibition should still be maintained by "the Bombay Government, as it appears from the communications of the Honourable "the Governor in Council that no injury and discontent are produced by our arrange-"ments which have been in force for many years in that quarter."

The treaties with Udaipur, Bundi and other States which provided merely for prevention of the transit of opium were accordingly immediately relinquished; preventive establishments were withdrawn from Malwa; and the rulers of all opium-producing States, with which treaties had been made, were relieved from those articles of their engagements which prohibited independent exportation.

The question whether a system of voluntary purchase of Malwa opium should be continued either on the existing terms or on others that might be negotiated was reserved for subsequent consideration.

Letters from the Governor-General in Council in Bengal to the Court of Directors, dated 3rd Aug. and 21st Sept. 1830, in App. IV. to the Report of the Select Committee, dated 11th Oct. 1831.

At the time when this decision was arrived at, a proposal made by the Bombay Government for an increase in the quantity of Malwa opium provided for the Bombay sales and for consumption in British territory and in that of allied Native States was under the consideration of the Government of India in the Separate Financial Department, as the demand for opium in China was increasing and the supply for local consumption was found to be insufficient.

Various measures were accordingly discussed for the maintenance of the Bombay opium revenue.

Deliveries of opium under the treaties to nearly the full stipulated extent were made for the year 1829–30, but in October 1829 Major Stewart, the Officiating Resident and Opium Agent at Indore, reported that all the States except two inconsiderable ones had given notice of their wish to cancel the engagements they had entered into in regard to opium altogether after the close of the season. Major Stewart therefore suggested three schemes for consideration:—

(1.) That new treaties should be negotiated with the States for securing the opium produced.

(2.) That Government should cease to buy opium and should raise a revenue by the issue of passes to Bombay.

(3.) That the agent should purchase the drug in the open market for transmission to Bombay for sale.

Major Stewart favoured the third of these schemes, as he thought that the dealers would not at first properly appreciate the value of the passes; and, influenced by this opinion, the Governor-General in Council, when authorising the relinquishment of all engagements at the close of the season, agreed somewhat reluctantly to give it a trial. The rise in the price of opium in Malwa, however, which followed the abrogation of the treaties upset Major Stewart's calculations, and opium was not obtainable at 55 Rs. a panseree or 770 Rs. a chest, which was the maximum limit of price fixed by the Government of India.

Eventually, in July 1830, after a considerable amount of correspondence between the Governor-General in Council, the Government of Bombay, and Major Stewart, resulting partly from a difference of opinion between the two Governments as to the measures which should be adopted, the Governor-General in Council decided to relinquish entirely the plan of purchasing for re-sale, and to confine the Government dealings to the grant of passes for the free conveyance of opium to Bombay for exportation.

The details of the system were left to the Bombay Government for settlement in communication with the Opium Agent, and the Governor in Council, in regulating the amount of the equivalent to be demanded for the passes, was requested to adopt the principle of "assuming something less than the net difference of expense incurred "on a shipment of opium brought to Damaun by the most favourable of the indirect "routes as compared with the cost of the transit to Bombay, and shipment by the "most favourable of the direct routes opened by the passes."

These orders introduced the Malwa pass duty system now in force, and the duty as at first fixed was 175 Rs. per chest of 140 lbs.

The monopoly in Malwa, therefore, was abolished mainly for political reasons, but there is sufficient evidence to prove that the system utterly failed to stop the export trade from places not in the possession or under the control of the British Government. The amount of opium smuggled to Daman during the continuance of the system amounted in one year, according to Sir John Malcolm, to 10,000 chests; and Mr. Stark, chief of the Revenue Department in the India Board, stated in his examination before the Select Committee of the House of Commons, which reported on the affairs of the East India Company in 1832, that he thought in one year the smuggled opium to Daman amounted to between 9,000 and 10,000 chests.

Accounts of the East India House, dated 23rd March 1840.

Notwithstanding the smuggling, however, the system appears to have been attended with a fair measure of financial success, the total net profit derived from it during the 10 years from 1820–2, to 1829–30 having been calculated to 127,63,397 rupees.

Letter from the Court of Directors to the Governor-General in Council, dated 16th Sept. 1829, in App. IV. to the Report of the SelectCommittee, dated 11th Oct. 1831.

A report of Mr. Swinton's proceedings from the time of his appointment to nearly the time of his resignation, which reached the Court of Directors in 1828–29, caused them to take for a time a more favourable view than they had hitherto done of the power of the Government of India "to restrain the exportation of Malwa opium so as "to prevent it from materially interfering with the opium revenue." On receipt, however, of the letters from the Governor General in Council, forwarding the Resolution announcing the abolition of the restrictive policy, and describing the measures taken for the introduction of the pass duty system, the Court agreed that good policy required the abolition of the treaties; and observed, with reference to a remark in one of the letters, dated 21st September 1830, which indicated the possibility of a re-establishment of the monopoly under certain contingences, that they "should decidedly disapprove any recurrence to a system of "monopoly in the purchase of opium grown within "the territory of any of the independent Powers in Central India."

Letter from the Court of Directors to the Governor-General in Council, dated 19th Oct. 1831, in App. 145 to Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 16th Aug. 1832.

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It is unnecessary to add much to the information already given regarding the measures taken to introduce a system of Excise upon opium consumed in India, and a brief reference to the other principal measures taken during the period covered by the Memorandum will suffice.

In Bengal, Regulation XIII. of 1816 was followed by Regulation XI. of 1818, which authorised the possession of foreign opium in specified quantities by travellers and horse dealers from foreign countries for private use and consumption, and enlarged the quantity of opium which individuals were permitted to possess from two to five tolas; and also provided for the grant to native medical practitioners of special licenses free of tax, authorising them to possess for medical purposes opium in a quantity in excess of five tolas, and for the supply to such practitioners of Government opium at a reduced price.

The Rangpore Agency, which was established for the provision of opium for internal consumption, was abolished in June 1820, as the quality of the drug there manufactured was found to be very inferior, and the quantity of it obtained also was insufficient; and opium for internal consumption as well as for foreign commerce was thereafter supplied from the Behar and Benares Agencies. Regulation VII. of 1824, (as amended by Regulation VIII. of 1826) enacted additional rules for the better security of the revenue derived from the exclusive manufacture and sale of opium, and for the realisation of the custom duty chargeable on foreign opium imported by sea, and introduced

a system of leasing or farming the duties leviable on the retail sale of intoxicating drugs, including opium.

In Bombay, Regulation XXI. of 1827, a Regulation framed, as explained in the preamble, with "the combined views of checking deleterious and vicious habits in the "people and of securing and improving the public revenue," codified the excise law of the Province, and enacted rules for the supply of opium for internal consumption and for its retail sale; and in 1830 another Regulation, Number XXX. of that year, was passed to legalise the import of Malwa opium into the Presidency, if accompanied by a pass granted by an officer of Government duly authorised in that behalf; the provisions of Regulation XXI. of 1827, which imposed an import duty of 12 rupees per Surat ser on such opium, being at the same time rescinded.

The abandonment of the attempted monopoly in Malwa compelled the Government of India to increase the quantity of opium offered for sale in the Bengal Presidency. "We are taking measures," wrote the Governor-General in 1830, "for extending the "cultivation of the poppy with a view to a large increase in the supply of opium to be "offered for sale at this Presidency. Our proceedings for this purpose will be reported "hereafter. In the meantime we look upon the difficulties which threaten this resource "through the removal of the restrictions in Central India, and from which the restrictive "system was not exempt, for during its existence the exportation from Daman to China "was continually increasing, to merit the watchful care of Government; for the final "effect of an increase beyond assignable limit in the quantity of this drug exported to "China from both sides of India is a result beyond the power of our foresight to "discover or even to hazard at present any speculation upon."

Par. 15 of letter, dated 21st Sept. 1830, from the Governor-General in Council to the Court of Directors, in App. IV. to the Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

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The following STATEMENT, (1) of the number of chests of BENGAL OPIUM sold at the public sales of the East India Company from 1787–88 to 1819–20; (2) of the number of chests of Bengal and Malwa opium similarly sold from 1820–21 to 1826–27, and (3) of the number of chests of Bengal opium sold in the four years from 1827–28 to 1830–31, and also in 1835–36, and 1840–41, shows the extent of the Bengal opium trade in the latter part of the 18th and early part of the 19th century, and illustrates the effect of the measures taken by the Government in 1830 to increase the supply of Bengal opium.

| Year. | Number of Chests Sold. | | | | Average Price realised for each Chest of Bengal Opium sold. |
|---|---|---|---|---|---|
| | Behar. | Benares. | Malwa. | Total. | |
| | | | | | Rs. |
| 1787–88 | 3,113 | 580 | — | 3,693 | 470 |
| 1788–89 | 1,907 | 423 | — | 2,330 | 569 |
| 1789–90 | 1,963 | 504 | — | 2,467 | 588 |
| 1790–91 | 2,267 | 572 | — | 2,839 | 553 |
| 1791–2 | 2,474 | 750 | — | 3,220 | 525 |
| 1792–3 | 2,152 | 832 | — | 2,982 | 632 |
| 1793–4 | 2,979 | 881 | — | 3,860 | 569 |
| 1794–5 | 3,502 | 1,148 | — | 4,650 | 559 |
| 1795–6 | 4,749 | 1,287 | — | 6,026 | 245 |
| 1796–7 | 5,331 | 1,233 | — | 6,564 | 264 |
| 1797–8 | 3,450 | 722 | — | 4,172 | 426 |
| 1798–9 | 3,325 | 729 | — | 4,054 | 750 |
| 1799–1800 | 3,665 | 905 | — | 4,570 | 718 |
| 1800–1 | 3,148 | 799 | — | 3,947 | 831 |
| 1801–2 | 2,570 | 722 | — | 3,292 | 1,383 |
| 1802–3 | 2,224 | 616 | — | 2,840 | 1,378 |
| 1803–4 | 2,380 | 779 | — | 3,159 | 1,950 |
| 1804–5 | 3,004 | 832 | — | 3,836 | 1,608 |
| 1805–6 | 3,278 | 848 | — | 4,126 | 1,039 |
| 1806–7 | 3,649 | 889 | — | 4,538 | 1,583 |
| 1807–8 | 3,420 | 788 | — | 4,208 | 1,276 |
| 1808–9 | 3,793 | 767 | — | 4,560 | 1,160 |
| 1809–10 | 3,970 | 998 | — | 4,968 | 1,557 |
| 1810–11 | 3,885 | 1,006 | — | 4,891 | 1,549 |
| 1811–12 | 3,959 | 1,007 | — | 4,966 | 1,328 |
| 1812–13 | 3,844 | 925 | — | 4,769 | 1,955 |
| 1813–14 | 3,023 | 649 | — | 3,672 | 2,554 |
| 1814–15 | 3,381 | 849 | — | 4,230 | 2,257 |
| 1815–16 | 3,571 | 747 | — | 4,318 | 2,091 |

The statistics of chests sold from 1787–88 to 1826–27 have been taken from par. 57 of a letter from the Court of Directors to the Governor-General in Council, dated 30th Jan. 1822, in App. IV. to the Third Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 11th October 1832, and from App. 143 to the Report of the Select Committee, dated 16th Aug. 1852.

The prices realised for Bengal opium from 1787–88 to 1796–97 have been taken from the letter of the Court of Directors abovequoted; and those from 1797–98 to 1830–31 from chap. V. of Part I. of the Report of the Commission appointed by the Government of India to inquire into the working of the Opium Department in 1883.

The figures showing the number of chests of Bengal opium sold in the four years from 1827–28 to 1830–31 have been taken from the same Report.

Data for ascertaining the average prices realised for Malwa opium from 1820–21 to 1826–27 are not available.

Statistics of the chests of Bengal opium sold and prices realised in 1835–36 and 1840–41 have been [illegible] March 1832.

| Year. | Number of Chests Sold. | | | | Average Price realised for each Chest of Bengal Opium sold. |
|---|---|---|---|---|---|
| | Behar. | Benares. | Malwa. | Total. | |
| 1816-17 | 2,885 | 800 | — | 3,685 | 2,289 |
| 1817-18 | 8,863 | 689 | — | 3,552 | 1,876 |
| 1818-19 | 3,095 | 611 | — | 3,706 | 2,221 |
| 1819-20 | 3,161 | 783 | — | 3,999 | 2,479 |
| 1820-21 | 2,537 | 508 | 1,600 | 4,605 | 4,283 |
| 1821-22 | 3,327 | 573 | 1,600 | 5,520 | 3,489 |
| 1822-23 | 2,661 | 699 | 4,000 | 7,360 | 2,062 |
| 1823-24 | 4,148 | 1,242 | 4,000 | 9,390 | 1,383 |
| 1824-25 | 2,836 | 974 | 4,200 | 7,810 | 1,990 |
| 1825-26 | 4,982 | 1,588 | 4,000 | 10,570 | 1,385 |
| 1826-27 | 4,698 | 1,652 | 3,065 | 9,415 | 1,846 |
| 1827-28 | 5,287 | 2,174 | — | 4,761 | 1,328 |
| 1828-29 | 6,149 | 2,429 | — | 8,578 | 1,357 |
| 1829-30 | 5,101 | 2,214 | — | 7,315 | 1,763 |
| 1830-31 | 5,384 | 2,540 | — | 7,924 | 1,482 |
| 1835-36 | 11,867 | 6,090 | — | 17,257 | 1,498 |
| 1840-41 | 13,014 | 5,248 | — | 18,362 | 311 |

The Select Committee appointed by the House of Lords in 1830 to enquire into the affairs of the Company and the trade between Great Britain, the East Indies, and China, took some evidence regarding the Bengal opium monopoly and the probable effect of the abrogation of the opium treaties with the Native Princes of Central India, but did not commit themselves to any expression of opinion upon the questions investigated.

The Select Committee of the House of Commons, however, in 1830–2, described, in their First Report on the China Trade, dated 8th July 1830, the conditions under which the trade in opium with China was at that time carried on; compiled, as an Appendix to their Third Report, dated 11th October 1831, a selection of copies and extracts of Despatches, sent to India by the Court of Directors subsequent to the passing of Act 53 Geo. III. c. 155, relative to the continuance and administration of the opium monopoly, and of the proceedings had thereupon; and made, in their final Report in 1832, a number of important observations and suggestions in regard to the opium revenue :—

Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 16th Aug. 1832.

"The monopoly of opium in Bengal," wrote the Committee, "supplies the Government with revenue amounting to Rs. 84,59,435 or sterling money 981,293*l.* per annum, and the duty which is thus imposed amounts to 301¾ per cent. on the cost of the article.

"In the present state of the revenue of India it does not appear advisable to abandon so important a source of revenue; a duty upon opium being a tax, which falls principally upon the foreign consumer, and which appears upon the whole less liable to objection than any other which could be substituted."

Four methods which had been suggested for raising a revenue besides the monopoly were then discussed :—

(1.) An additional assessment on lands under poppy cultivation.
(2.) A duty to be levied according to the value of the standing crop when ripe.
(3.) An Excise duty on the juice when collected.
(4.) A Custom duty on the exportation of opium.

Of these (2) and (3) were considered to be open to insuperable objections. No. (1) was thought to be "consistent with justice in the proprietors and cultivators," would allow "freedom to the employment of capital and industry in the production of opium," and would not be liable to the evils from smuggling necessarily attending upon a system of high Customs or Excise duties. Difficulties, however, were said to have been suggested by some witnesses, and the Committee, feeling themselves unable to decide the question of the practicability of the measure, owing to their want of knowledge of the state of the country, contented themselves with recommending it as "well worthy the careful consideration of the Government."

A Custom duty on the export of opium was considered in itself to be a desirable mode of taxation, inasmuch as it would leave the producer unfettered, and would fall exclusively on the foreign consumer, but was thought to be incompatible with the

existing amount of the revenue on account of the encouragement it would offer to the smuggler. "If, however," it was observed, "it should hereafter be found necessary "or expedient to effect such a reduction in the price of opium as should prevent any "serious interference on the part of the smuggler, the substitution of a Custom duty in "the place of the present monopoly would be productive of a great advantage."

The monopoly, therefore, was accepted as being, under the circumstances then existing, the best possible system. "Although," wrote the Committee, "the Govern- "ment monopoly of opium must in all probability, like all their monopolies, be dis- "advantageous in consequence of the want of economy in the production, and the "restrictions which it imposes on the employment of capital and industry, yet it does "not appear to be productive of very extensive or aggravated injury; and unless it "should be found practicable to substitute an increased assessment on poppy lands, "it does not appear that the present high amount of revenue could be obtained in a "less objectionable manner."

The precarious character of the revenue, owing to the absence of exclusive control over the production and consumption of opium was, however, pointed out, and the Committee remarked:—"It would, therefore, be highly imprudent to rely upon the "opium monopoly as a permanent source of revenue; and the time may probably not "be very far distant when it may be desirable to substitute an export duty, and thus "by the increased production under a system of freedom to endeavour to obtain some "compensation for the loss of the monopoly profit."

In regard to Malwa, the policy of the measures recently taken to abandon the attempted monopoly, and to substitute for it a permit or transit duty, was said to be beyond doubt, but the Committee added:—

"It must be recollected that every additional facility which is afforded to the sale of "Malwa opium, will eventually enable it to enter with increased advantage into com- "petition with the opium of Bengal, a consideration which tends still more strongly "to recommend either the adoption of the system adverted to in the preceding "paragraph" (*i.e.*, a system of free trade with an export duty), "or of some other "equally calculated to meet such a contingency."

R. M. DANE.

9th August 1894.

# APPENDIX C.

## A Narrative of the Circumstances that preceded and the Causes that produced the First Chinese War;

By Mr. R. M. DANE, of the India Civil Service.

### Introductory.

In the accompanying narrative, which has been written by request for the Royal Commission, an attempt has been made to give a faithful description of the relations, commercial and political, which existed between Great Britain and China from the time that trade was first opened with that country up to the outbreak of hostilities in 1840, and to show what were the causes which led, directly and indirectly, to the so-called Opium War.

The narrative is in two chapters. Chapter I. contains an account of the leading incidents of British intercourse with China during the time that the monopoly of the trade with that country was held by the East India Company. Chapter II. deals with the circumstances and incidents which immediately preceded the war.

The facts prior to 1810 are taken principally from the books on China published by Sir John Davis, Bart., K.C.B., and Mr. Auber. Sir John Davis was for many years a supra-cargo of the East India Company at Canton, and was afterwards President of their Canton Committee of Management, Superintendent of British trade, and British Plenipotentiary in China. Mr. Auber was Secretary to the Court of Directors of the East India Company. Both of these gentlemen had, therefore, full access to the official records of the Company, and Sir John Davis took personally an important part in many of the occurrences that preceded, and that followed, the first war. Sir George Staunton's account of Lord Macartney's Embassy to the Emperor of China, printed in 1797, and the Miscellaneous Notices, relating to China, published by Sir George Thomas Staunton in 1822, have also been referred to.

For the 32 years from 1810 to 1842 reliance has been placed almost entirely upon official records, and correspondence which has been presented to Parliament; upon Reports of Select Committees of the House of Commons; upon the correspondence connected with Lord Amherst's Embassy to China in 1815, and Sir George Thomas Staunton's Notes relating to that Embassy; and upon Hansard's Parliamentary Debates. Copious extracts and quotations have been given, and the authority for every statement made is clearly indicated by marginal notes.

### Chapter I.

"China. An Outline of its Government, Laws, and Policy," by Peter Auber; published in 1834.

Attempts were made by the London East India Company, during the first 20 years of their establishment, to open a trade with China from Firando in Japan, but without success. In 1635 also the President of their Council at Surat sent a trading vessel, freighted partly by the Portuguese at Goa, to the Portuguese settlement of Macao, near Canton. The Portuguese Governor of the settlement, however, was hostile, and the result of the voyage was not calculated to encourage further efforts.

"China," by Sir John Davis (New Edition); published in 1857.

In 1637 Captain Weddell, who was connected with Courten's Association,* visited the port of Canton with four merchant ships, and made a determined attempt to trade. The Portuguese misrepresented his intentions, and he was received with so much hostility that he was moved in a fit of indignation to bombard and capture the Bocca Tigris fort. This heroic measure secured him a certain amount of civility, and cargoes

* Courten's Association was licensed to trade to the East Indies (*i.e.* to all places beyond the Cape of Good Hope and the Straits of Magellan) by Charles I. in 1635, in violation of the exclusive privilege of that trade possessed by the London Company under Royal Charter. The Association was amalgamated with the London Company in 1650.

were eventually obtained for his ships; but the voyage, viewed solely as a trading venture, does not appear to have been profitable, and no other attempt was made by the English to renew commercial intercourse with China until 1664.

From that year the London and new East India Companies made further efforts to trade at the ports of Canton, Amoy, Chusan, and Ningpo, and at the island of Formosa; and at Amoy, which was one of the last places in China to submit to the Manchu Tartars, these attempts seem to have met with a certain measure of success.

Letter from the Court of Directors to Lord Amherst, dated 17th Jan. 1816, in Vol. 196 of manuscript. China Records of the East India Company at the India Office. Books on China, by Davis and Auber.

Eventually, Canton, owing either to advantages of situation or to the commercial instincts of its inhabitants, became the principal place of resort of British ships, and in the early years of the 18th century the United Company succeeded in there establishing a fairly regular trade.

In 1702 the Chinese Government endeavoured to constitute a monopoly of all foreign trade at Canton in favour of one man, who was known as the Emperor's merchant; but this "monster in trade," as he was called by the supra-cargoes, soon recognised his inability to carry on the business without assistance, and other merchants were allowed to participate in it for a pecuniary consideration. Each firm in the body of merchants thus created was called a Hong, and their monopoly of the foreign trade with all nations survived until a new order of things was established as a result of the war between Great Britain and China in 1840–42. The limited number of these merchants enabled them to combine, and in 1720 they formed themselves into a united firm, known as a Cohong, with the intention of fixing by agreement the prices of all foreign goods. The supra-cargoes, however, refused to trade as long as the combination existed; and a representation to the Governor was successful in defeating the project for the time.

The supra-cargoes at this time went to and fro between England and China with the Company's ships, and merely resided in Canton long enough to dispose of the outward cargoes and invest the proceeds in tea, silk, and other produce of China. In one respect their position seems to have been superior to that which the Company's representatives subsequently enjoyed, as they were allowed to communicate direct with the authorities, and had, therefore, less difficulty in making their wishes and grievances known. The Tartar Emperor, Kanghi (1622–1723) appears to have encouraged foreign trade, and the Jesuit missionaries during his reign enjoyed marked favour at Court. On the accession of his son, Yungching, however, in 1723, the policy of the Government became more inimical to foreigners, and the restrictions placed upon intercourse between the foreign traders and Chinese officials at Canton were gradually increased, until in course of time the Hong merchants became the recognised channel of communication between them.

The duties and exactions to which the trade was subject, were a constant source of complaint; and in 1727 the supra-cargoes made a formal protest, and threatened to take the trade to Amoy if the exactions were not removed. The Superintendent of Customs promised to grant all old privileges, and the trade was resumed; but in the following year an additional duty of 10 per cent. was imposed upon all exports. A deputation was sent to the city gates with a remonstrance, and an interview with the Governor was obtained, but no relief was given.

In 1734 and 1736 attempts were made by the Company to trade at Amoy and Ningpo, but without success. In the latter year the Emperor Kienlung, on his accession, issued orders directing the remission of the 10 per cent. duty and of some of the port duties; but the orders do not appear to have been properly carried out, as we find the "present" or enter-port duty, which was supposed to have been remitted, specified as a grievance by the servants of the East India Company in 1829. The European traders were required to prostrate themselves to receive the announcement of these orders; but the representatives of the 10 European ships then in the port, (four English, two French, two Dutch, one Dane, and one Swede,) combined and refused to degrade themselves and the countries to which they belonged, by submitting to the "slavish posture required."

The visit of Anson's ship, the "Centurion," to Canton, in 1742, gave rise to considerable friction with the local authorities. The Commodore successfully resisted the efforts of the Chinese to prevent him from proceeding up the river to Canton, and to levy port duties upon the "Centurion" and a Spanish ship, which he had taken as a prize of war, and obtained eventually a personal interview with the Governor, in acknowledgment of the services rendered by British seamen during a fire in the city, but the incident does not appear to have effected any amelioration of the condition of the English traders at the port.

The establishment of the Hong merchants as the medium of communication between the foreign traders and the local authorities rendered it increasingly difficult for the traders to obtain redress for the grievances under which they laboured; and in 1754 the Company's ships were detained outside the port until the Governor promised to attend to their complaints. The supra-cargoes were accorded an interview with the Governor and were allowed to ventilate their grievances, but little was ultimately gained. A system, which had been introduced some years before, of making the Hong merchants responsible for the payment of customs duties by foreigners, and for the control of their proceedings, by requiring the appointment of one of the merchants as a surety for every ship entering the port, was one of the principal grievances which was ineffectually complained of upon this occasion.

"China," by Sir J. Davis.

In 1757 the foreign trade was confined to Canton by order of the Emperor Kienlung, and Europeans were prohibited from resorting to Ningpo, Chusan, and Amoy; and in 1759 the English factory at Ningpo was destroyed. Notwithstanding this, Mr. Flint, an enterprising Englishman in the service of the Company, went later in the year to Ningpo, to try and re-establish a trade. Failing to secure his object, he proceeded to Pekin, where he succeeded in attracting the notice of the Emperor to the complaints of the traders against the Canton officials. A mandarin of rank was sent with him overland to Canton; the charges made were inquired into; and as the result the Superintendent of Customs was dismissed from office, and orders were issued directing the remission of certain impositions on the trade. Mr. Flint, however, was subsequently seized by the authorities, imprisoned for two years at an island near Macao, and finally banished to England, for the offence of endeavouring to open a trade at Ningpo contrary to orders; and a Chinese, who had assisted him by writing the petition to the Emperor, was decapitated for traitorously encouraging foreigners to oppose the Imperial decree.

In 1760 the Hong merchants, apparently with the approval of the Government, re-established the Cohong and entered into a combination, which had for some years the effect of lowering the prices obtained for the Company's goods in China.

Books on China by Auber and Davis.

In 1765 H.M.S. "Argo" arrived at Canton on convoy duty, and the Chinese on some pretext* insisted on searching the ship. The Captain objected, but his supply of provisions was stopped, and he finally agreed to allow a mandarin to go on board. Then the Chinese insisted on measuring the ship and levying port duties; and as some demur was made, they stopped the English trade to compel the Captain to agree to the demand. Four months were occupied in discussion, but the Captain ultimately gave way, at the solicitation of the supra-cargoes, and the ship was measured. The success of the Chinese on this occasion is said to have increased their arrogance and insolence towards the traders.

In 1770 the supra-cargoes ceased to return to England with the trading ships, and took up their residence permanently in China, living at Canton during the trading season and at the Portuguese settlement at Macao throughout the rest of the year. In the same year also they succeeded, with the assistance of one of the Hong merchants, and by the expenditure of a considerable sum of money, in obtaining an edict from the Governor for the dissolution of the Cohong.

"China," by Sir J. Davis, and Notices relating to China by Sir G. Staunton.

In 1781 the Company's supra-cargoes were involved in serious difficulties with the Government, owing to the lawless proceedings of an Englishman named McClary, the master of a ship trading from Bengal. McClary, hearing the news of the declaration of war between England and Holland, seized a Dutch ship which was lying at Whampoa, and tried to carry her out of the harbour, notwithstanding the remonstrances of the Company's supra-cargoes. The Chinese Government held the supra-cargoes, who were then at Macao, responsible for McClary's proceedings, and actually ordered them to be seized as hostages, but the Portuguese would not carry out the order. McClary was defiant, and finally made terms himself with the Chinese for the surrender of the vessel, on consideration that he should be allowed to retain as his prize an iron chest, containing pearls and gold, that formed part of the cargo. The Dutch ship was accordingly taken possession of by the Chinese in a triumphant manner; and McClary, who was little better than a pirate, departed with his plunder.

Auber's China.

The regulations of the Chinese Government permitted trade by barter only, and prohibited the Hong merchants from borrowing money from foreigners, but the regulations were easily evaded, and in 1782 some of the merchants were heavily indebted to British subjects, the claims amounting to 1,000,000*l.* sterling. The

* Sir John Davis says the Chinese insisted on searching the ship on the plea that there was a woman on board. Mr. Auber says that the difficulties raised were connected with the supposed shipment of opium.

creditors, who were all private adventurers, applied to the Company, and the Court of Directors consented to allow their supra-cargoes to use their influence with the authorities to obtain an adjustment. The supra-cargoes foresaw that the debts would probably be liquidated at the expense of the Company's trade, and some of the claims put forward were exorbitant. Protracted discussion therefore ensued, and some of the creditors in India applied to the Government of Madras and to Sir Edward Vernon, the Admiral on the Indian station, for countenance and support. The Admiral, accordingly despatched Captain Panton, in the "Sea Horse" frigate to Canton to submit a letter of remonstrance to the Governor; and Captain Panton carried out these instructions in spite of a protest from the supra-cargoes. The remonstrance was effectual; and the Emperor, to whom the question was referred, issued an edict, enforcing the collective responsibility of the Hong merchants, and ordering payment by them as a body of all debts which had been ascertained upon inquiry to be due. The mode of payment was left to the discretion of the Local Government.

The principle of collective responsibility, thus established, was afterwards found to be an obstruction to legitimate commerce, but the measures taken on this and on several subsequent occasions for the liquidation of debts due by the Hong merchants evinced a desire on the part of the Chinese Government for fair dealing as between the traders of the two nations. The Company, however, as the supra-cargoes anticipated, was a direct loser by the proceedings, as additional duties were imposed on the trade to provide a fund for repayment of the debts; and in 1782 the Directors, under the authority conferred by their monopoly, issued orders directing that all private persons should be deported from Canton. The duties, thus levied, remained a burden upon the trade until the Hong system was abolished by the war in 1840–42, being either reduced or increased in accordance with the exigencies of the time. They were known by the name of the Consoo fund; and when first imposed, do not appear to have exceeded 3 per cent. on the value of certain specified articles, but were afterwards, at times, considerably higher.

The Chinese law of homicide, which required a life for a life and did not admit the plea of self-defence, involved the foreign traders in continuous disputes with the Chinese authorities during the latter part of the 18th and earlier years of the 19th century.

In 1772 an affray took place between some English sailors and a party of Chinese, and several men on both sides were badly hurt. The ship to which the sailors belonged was detained in port for some time, but as the wounded men all recovered the affair was allowed to drop. "China," by Sir John Davis.

In 1773 an Englishman, named Scott, was surrendered by the Portuguese at Macao, and put to death by the Chinese on a charge of causing the death of a Chinese, though inquiries made by the Portuguese had satisfied them that he was not guilty of the charge.

In 1780 a Frenchman, who killed a Portuguese in an affray in self-defence, was surrendered to the Chinese on their requisition and publicly strangled. The fact that the Portuguese stabbed the Frenchman twice before he retaliated, was admitted by the Chinese judge; but was not, in accordance with their law, accepted as any excuse. Papers relating to the death of Mr. Mackenzie, at Canton, in 1830, in App. II. to the 3rd Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

In 1784 again, an Englishman, a gunner on board a British ship engaged in the Indian trade, when firing a gun as a salute under orders, accidentally caused injuries to three Chinamen, who were in a boat alongside the ship; and one of the men died from the effects of the injuries received. The surrender of the gunner for trial was demanded, and the supra-cargo of the ship was treacherously seized and confined, to enforce compliance with the demand. The traders of all the foreign factories combined; ordered up the ships' boats manned and armed to Canton, as a protest against this high-handed proceeding; and entered into negotiations with the Deputy Governor to try and obtain his release. Eventually, in compliance with a written request from the supra-cargo, the gunner was surrendered for trial, a Chinese officer giving a verbal assurance that no apprehension need be felt for his life. He was, however, tried and condemned by the Chinese, and publicly strangled. The supra-cargo was released on the surrender of the gunner. Books on China by Auber and Davis.

This disgraceful case appears to have been a violation even of Chinese law, which permitted the payment of a cash ransom, in lieu of the death penalty, in cases of accidental homicide; and if it be assumed that sufficient care was not taken to prevent injury to the Chinese, the man who ordered the gun to be fired, was responsible rather than the gunner.

It must, nevertheless, be admitted that the Chinese displayed no particular partiality* to their own countrymen in the administration of their criminal law; and a Chinese, who was found guilty of causing the death of an English seaman in an affray in 1785, was strangled by order of the Emperor.

The Court of Directors appear to have blamed their servants more for their attempt to intimidate the authorities by a show of force than for their pusillanimous surrender of the gunner. "Experience," they wrote, "had shown that the Court of "Pekin would use its power to carry into execution, whatever it declares to be the "law."

The case, however, did not form a precedent, and the supra-cargoes, though often reduced to great straits to evade compliance with requisitions of the kind, did not again surrender a British subject to Chinese justice.

The position of the English in China at this time was felt to be unsatisfactory. The greater part of the foreign trade was in their hands,† but no attempt had been made to establish political relations between the Government of Great Britain and the Government of China. The arrogance of the Canton authorities was on the increase, and no relief could be obtained from the impositions and exactions to which the trade was subject.

In 1788, therefore, it was resolved to despatch an Embassy to China, but the Ambassador, Colonel Cathcart, died on the way out, and the project was temporarily abandoned. Four years later, in 1792, Lord Macartney was sent to Pekin with instructions to try and effect some improvement in the conditions under which the trade was carried on at Canton, and in the position of the English at that port; and to arrange, if possible, for an extension of commercial intercourse to Ningpo, Tientsin, and other places, and for the appointment of a British Resident at Pekin.

"Account of Lord Macartney's Embassy to the Emperor of China," by Sir George Staunton; printed in 1797.

The Ambassador and his colleagues, who were regarded by the Chinese as tribute bearers, were received with civility, and were entertained with hospitality. Flags were attached to the boats, which conveyed them up the Peiho, inscribed in Chinese——Ambassadors Bearing Tribute—and, from considerations of expediency, Lord Macartney raised no objection to this description of the character of the Embassy. He declined, however, to compromise the dignity of his Sovereign, and to acknowledge publicly the supremacy of China by performing the ceremony of Kotou, or prostration, before the Imperial throne. The Emperor Kienlung, with commendable moderation, agreed to dispense with the ceremony; and Lord Macartney and Sir G. Staunton, Secretary to the Embassy and Minister Plenipotentiary, were honourably received at a public audience. A letter addressed by the King of England to the Emperor was placed by Lord Macartney, kneeling on one knee before the throne, in the Emperor's own hands, and was graciously accepted and acknowledged; and the Ambassador and Sir G. Staunton were, after the audience, entertained by the Emperor himself at a banquet. The members of the Embassy remained for some days as State guests in attendance at the Court in Tartary and at Pekin; but discussion on matters of business was avoided by the Chinese, and the Ambassador was only able to communicate to the principal Minister an abstract of the commercial concessions desired, the Minister on his part, promising to consider the various requests, but not binding himself to support them. The delivery by the Minister of a letter from the Emperor to the King of England closed proceedings at Pekin, and the Embassy returned overland to Canton, and thence took ship for England.

The importance and significance attached by the Chinese to the performance of the Kotou was evidenced by the fact that the Emperor preferred to receive the Ambassador

* In one respect foreigners were treated less favourably in cases of homicide, as an edict of the Emperor Kienlung, in 1743, sanctioned a proposal made by the Governor of Canton for the immediate execution of any foreigner, who might be found guilty by the local magistrates, and by the Governor and Deputy Governor of Canton, of causing the death of a Native, whether wilfully, or by conspiracy, or in the course of an affray, without the usual period of imprisonment, and removal of the criminal for examination in the interior courts. (Staunton's Notices relating to China, p. 426.)

This order had naturally the effect of preventing any possibility either of appeal or reprieve; but it is not likely that foreigners would have gained much by any appeal to the higher tribunals or to the Central Government at Pekin.

† According to Appendix V. to Sir George Staunton's account of Lord Macartney's Embassy, the value of the Company's exports from England to China in 1792 was nearly 1,000,000*l.*, and of the exports from India to China nearly 700,000*l.*, besides opium worth about 250,000*l*; and the value of the imports from China into England exceeded 1,500,000*l.* (prime cost), and into India amounted to 330,000*l.* only.

The total value of the imports into Canton, in 1792, from other European nations amounted to 200,000*l.*, and of the exports to them from China to 600,000*l.*

As between China and England the balance of trade was in favour of China, but the excess in the value of the Indian exports over that of the imports was, even at this time, considerable.

bending merely on one knee, as in the ceremonial observed at the English Court, rather than agree to an offer made by him to prostrate himself before the throne on condition that a Chinese officer of rank equal to his should do the same before a picture of the King of England.

Auber's China.

The Emperor in his letter to the King of England declined to sanction any alteration in the conditions under which the trade between the two countries was carried on. "As the requests," he wrote, "made by your Ambassador militate against the laws "and usages of this our Empire, and are at the same time wholly useless to the end "proposed, I cannot acquiesce in them. I again admonish you, O King, to act "conformably to my intentions, that we may preserve peace and amity on each side "and thereby contribute to our reciprocal happiness. After this, my solemn warning, "should your Majesty, in pursuance of your Ambassador's demands, fit out ships in "order to attempt to trade either at Ningpo, Tchusan, Tiensing, or other places, as "our laws are exceedingly severe, in such case I shall be under the necessity of directing "my mandarins to force your ships to quit these ports, and thus the increased "trouble and exertions of your merchants would at once be frustrated. You will not "then, however, be able to complain that I had not clearly forewarned you. Let us "therefore live in peace and friendship, and do not make light of my words. For this "reason I have so repeatedly and earnestly written to you upon this subject."

The inability of the Ambassador and his colleagues to communicate with the Chinese in their own language, and the consequent necessity for the employment of interpreters were thought at the time to have contributed to the failure of the attempted negotiations, but it is doubtful whether the belief had any foundation. The relations established by Lord Macartney with some of the Chinese officials, particularly with the newly-appointed Governor of Canton, who accompanied him during part of his journey across China, appear to have been decidedly cordial.

Books on China by Auber and Davis.

In 1795, one year after the return of the Embassy, a letter and presents were sent by the King of England to the Emperor of China, with the object of further conciliating the goodwill of the Central Government. These were accepted, and a letter, with presents, was sent by the Emperor in reply. The exchange of these civilities, combined with the growing importance of the Company's trade and the friendly disposition of the Governor, appear to have had considerable effect in improving the position of the English at Canton, though letters sent by Lord Macartney, Mr. Dundas, and the Chairman and Deputy Chairman of the Directors of the East India Company to the Governor of Canton were refused.

In 1799 a dispute was occasioned by the shooting of a Chinese, under the following circumstances, from a schooner belonging to the Royal Navy, which was lying at Whampoa. Some Chinese were seen at night in a boat, in proximity to the ship, and were thought to be trying to cut the cable. They were hailed, but gave no reply, and a shot was then fired into the boat. One man was wounded, and another, who jumped into the sea in his fright, was drowned. The authorities demanded the surrender of the man who had fired the musket. Captain Dilkes, of H.M.S. "Madras," which was also at Canton, demanded that the Chinese in the boat should be punished for misconduct, and would not agree to surrender the seaman. Some discussion took place, but the wounded man recovered; and the case was eventually allowed to drop. The Governor shortly after, at the request of the President of the Select Committee, or governing body of the Company's supra-cargoes, supplied an abstract of some provisions of the law regarding homicide for the information of Europeans, but stated that an inspection of the Chinese code could not be permitted without the express permission of the Emperor.

In 1803 a second complimentary letter, with presents, was sent by the King of England to the Emperor of China, and was delivered by the President of the Select Committee, in 1805, to the Governor of Canton. A letter from Lord Castlereagh to the principal Minister at Pekin, and another from the Chairman of the East India Company to the Governor at Canton were, however, refused, on the ground that Chinese officers were not permitted to receive letters from the officers of other nations.

The King's letter to the Emperor was acknowledged, and presents were sent in return in the following year; the Emperor, in his reply, stating that British subjects in China were always treated "with the utmost indulgence and affection."

Auber's China.

In 1805 the Chinese Government took umbrage at the publication, in Chinese, of books on the subject of the Christian religion, and at the circulation of such books by Roman Catholic missionaries, and by Chinese converts, among the population at Canton. The books were ordered to be burned, and the Chinese responsible for their

Note relative to the suspension of the trade of the East India Company at Canton in 1807, by Sir G. Staunton (Notices relating to China), and Books on China by Auber and Davis.

dissemination were sent into banishment as slaves. An edict also was issued at Pekin, admonishing the Tartars against the supposed fallacies of the Christian religion.

In February 1807, a serious affray took place at Canton. Some sailors, belonging to the Company's ship "Neptune," when drinking at a spirit shop in Canton, had quarrelled with the natives, and had, in consequence been confined to the factory. A crowd of natives collected before the factory, and began to pelt passing Europeans, and the sailors, losing patience, rushed out and attacked them, and in the fight, that ensued, several persons were injured, and one of the wounded Chinese subsequently died. The Select Committee were held responsible, and a demand for the surrender of the man, who had struck the fatal blow, was made upon them.

Inquiries were instituted by a committee of the Company's officers, which established the identity of some of the more prominent rioters, but failed to discover the individual who was responsible for the homicide. The demand was necessarily rejected, and the Governor suspended the whole trade of the Company from the 4th to the 31st of March, and prevented the Company's fleet from leaving the port. The Hong merchant, who had secured the "Neptune," and the President of the Committee were also threatened by the Chinese, with the object of enforcing compliance with the demand. The Committee were not intimidated; and an offer by the security merchant of a reward of 20,000 dollars for information that would lead to the conviction of the offender produced no result. Eventually, after protracted discussion, the Chinese, satisfied apparently that the Committee would not, or could not, comply with their demand, proposed a trial of all the sailors concerned in the riot by Chinese Judges in the English Factory. This was readily agreed to, and a promise was given, that if any individual was fairly convicted of murder, he would be surrendered. The embargo on the Company's trade was then withdrawn, the "Neptune" only being detained until the conclusion of the proceedings.

The trial, which followed, was conducted in the English Factory by the City Governor and other officers, in the presence of the Select Committee and Captain Rolles of H.M.S. "Lion," which was fortunately in the port at the time. Eleven of the seamen were found to have been prominent in the riot, and from them the judges selected (apparently without sufficient reason) a man named Edward Sheen, and decided that he had caused the death of the deceased Chinese. The other men were dismissed to their ship to be punished by their Commander in such manner as he might think proper, and the detention of Sheen in the custody of the Committee was required pending the final settlement of the case. An attempt to insist on Sheen's being kept in confinement at Canton, after the departure of the Committee to Macao, was defeated by the firmness of Captain Rolles, who threatened to take him away in the "Lion"; and eventually the authorities, to extricate themselves from an inconvenient difficulty, invented a story that Sheen had dropped a piece of wood on the deceased's head from an upper window, and caused his death by accident. The Central Government at Pekin was satisfied, and the release of Sheen was sanctioned in January 1808, on payment of a fine of 4*l.* sterling to the relatives of the deceased.

The firmness of the Select Committee on this occasion was approved by the Court of Directors, and Captain Rolles received a present of 1,000*l.* from the Company for the services which he had rendered. The Court, however, strongly impressed upon the Committee the necessity of preventing the recurrence of similar riotous proceedings; and the Company's seamen, in after years, were not permitted to openly visit Canton.

Books on China by Auber and Davis.

In 1802 and 1808, during the wars with the French in Europe, expeditions were despatched from India to occupy the Portuguese settlement of Macao, to prevent its occupation by the French. The instructions issued on both occasions appear to have contemplated occupation with the consent of the Chinese; but this consent the Chinese were not prepared to give. Macao they regarded as part of the Chinese dominions; and they objected, not without reason, to the assumption that they were unable to defend their own territory.

On the first occasion the Portuguese were secretly opposed to the project, though they made no open objection. The Governor of Canton protested; but the arrival of a ship from Europe, with news of peace, caused the expedition to return to India, before the occurrence of any serious rupture. The second expedition, however, nearly led to hostilities, a result for which the Select Committee were largely if not wholly responsible. The occupation of the settlement appears to have been decided on in the first instance, in accordance with their suggestion, if not indeed upon their initiation; and Admiral Drury, who was in command of the ships, was directed to take no steps without their knowledge and concurrence, and to avoid,

as far as possible, any cause of offence to the Chinese. The Admiral seems to have have been prepared to apply for permission to land the troops, but the Committee decided that this was unnecessary. A letter was accordingly addressed to the Governor of Canton by the Admiral, explaining the objects of the expedition; and troops were landed in opposition to the wishes of the Portuguese, and without any attempt to obtain previous permission from the Chinese authorities. The Governor at once protested strongly. Troops were ordered to Macao to drive the English out; trade was suspended; provisions were refused to the King's and to the Company's ships; and Chinese servants were forced to leave the English Factory. The Committee tried to discuss the question, but the Governor would not consider any representation, and insisted upon the immediate removal of the troops. Admiral Drury then demanded an interview, but the Governor declined to recognise him, or to enter into any negotiations. British subjects were ordered to embark in their ships; and H.M.S. "Antelope" passed up the river, returning the fire of the forts at the Bocca Tigris. The Governor, was firm. If, as he said in a declaration communicated to the Committee, the English wanted war, he was ready, but he would not commence. If they wished to trade, they must withdraw the troops from Macao. Finally, the Admiral, in the hope of intimidating the Governor, attempted, with the aid of the Company's seamen and boats, to force a passage through the Chinese junks, which were drawn up in a line in the river to block the way to Canton. The Chinese opened fire; an Englishman was wounded; and the Admiral gave the signal for attack. The signal, however, was not observed, and the Admiral changed his mind and abandoned the enterprise. An edict from the Emperor confirming the Governor's orders, that no trade would be allowed as long as a soldier remained at Macao, was communicated by the Governor to the Admiral; and, after further consultation with the Committee, he yielded and removed the troops.

On the withdrawal of the troops from the settlement, the trade was re-opened. The success of the Chinese naturally increased their arrogance, and the victory gained over the Admiral was commemorated by the erection of a Pagoda. The President and members of the Select Committee were removed from their appointments by the Court of Directors for their share in this fiasco; and the Governor of Canton was also removed, or transferred, by the Emperor, presumably because he had failed to prevent the occurrence of a disturbance.

In the early part of the year 1810 another affray took place between the natives and some British seamen belonging to one of the Company's ships, and a Chinese was killed. The authorities at first ordered the detention of the Company's ships, but eventually allowed them to leave on condition that inquiries should be made and that the offender, if discovered, should be punished according to the law of England.

Letters from the Canton Committee to the Court of Directors dated 28th Feb. and 1st March 1810; 31st Jan. and 20th Feb. 1811; 10th Jan. 1812, in App. 114 to the third Report of the Select Committee of the House of Commons, 1832 [afterwards the East India Company—cost £155,000, 1831.

The Select Committee, it appears, had reason to suspect some seamen belonging to one of the Company's ships, but the Chinese attributed the crime to the seamen of another ship, and the Committee took no steps to undeceive them. Inquiries were instituted by the Commodore of the Company's fleet, and the case was brought under the consideration of the Privy Council, but under the law of England the men suspected could not even be brought to trial. In the following season, 1810-11, the Chinese renewed their demand for the surrender of the offender, and refused again to allow the Company's ships to leave the port on the ground that the Committee had neither delivered up the offender, nor accounted satisfactorily for their failure to do so. The Committee determined to remonstrate, and as the Hong merchants were either unwilling or afraid to deliver their remonstrance, an address was presented to the Superintendent of Customs in person by a deputation of the Company's servants. This paved the way for negotiations; and a further explanation of the reasons, why the Committee had been unable to comply with the requisition, coupled with an intimation to the Hong merchants that the fleet would sail, without permission, if the detention continued much longer, induced the Chinese to withdraw their objection, and the ships were allowed to leave soon after.

The Court of Directors, though holding that it would not be proper to deliver up an individual, who had killed a Chinese, into the hands of the Government, unless the offence amounted to murder, disapproved of the conduct of their supra-cargoes on this occasion; and transmitted to Canton, for delivery to the Chinese Governor, a letter from the President of the Board of Control explaining the circumstances under which it had been found impossible to try or punish the offender in England. By the time the letter arrived the incident was closed, and the Select Committee was differently constituted; and the new Committee deemed it unadvisable to present the letter, for fear it might have the effect of re-opening the question. They urged,

moreover, in defence of the action of their predecessors that the line of conduct adopted was, under the circumstances the only one consistent with the character and interests of the Company and of the British nation. "Whenever," they wrote, "a murderer is demanded by the Chinese Government, a consequent selection "and surrender of an individual into their hands is completely equivalent in effect to "a provisional sentence of death. The individual may be afterwards pardoned or "not according to circumstances, but we think there can be no question that our "act in such cases is held by the Chinese Government as perfectly conclusive both in "respect to the law and to the fact; or, in other words, as competent evidence both "of the identity of the offender and his offence having amounted to murder."

Letter from the Canton Committee to the Court of Directors dated 10th Jan. 1812, in App. II., as above.

An incident which serves to illustrate Chinese impartiality, occurred in 1811. The first lieutenant of H.M.S. "Indefatigable" was attacked and roughly handled by the natives, when on shore near Chuenpee, an anchorage used by ships of war below the Bocca Tigris, and his gun was taken from him. The authorities, on application, granted immediate redress; the principal offender was brought to Canton in confinement, and the gun, which had been taken, was restored.

Fourth Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 10th April 1812.

The position occupied by the East India Company in China, and the manner in which the China trade was carried on in the early part of the 19th century, are well described in the Fourth Report of the Select Committee of the House of Commons, appointed in 1810–12, to inquire into and report on the affairs of the East India Company.

"The trade with China," they wrote, "has for a very long period formed "a part of the exclusive privilege of the East India Company, and has been "carried on upon principles conducive, in a very eminent degree, not only to the "advantage of those embarked in it, but likewise to the interests of the British "Empire in its revenue, in the employment of its shipping, and in a steady and "continued demand for its manufactures. It is nevertheless a fact, universally known, "that the Company have no footing whatever in China coming under the denomination "of permanent; that the intercourse with the merchants of that extensive Empire is "very limited, being exclusively confined to a small factory in the vicinity of the "City of Canton, occupied by the sufferance of the Court of Pekin, under strict regulations designating the parties with whom and the manner in which the trade is to "be conducted. The factory of Canton may therefore be considered as the place of "mere occasional residence for the convenience of the agents of the Company in their "transactions with the merchants, who are termed Hong merchants, expressly licensed "by the Chinese Government, to have dealings with them. These merchants are very "limited in number, being in 1793 twelve, and in 1808 fourteen.

"The official designation of the agents of the Company is that of supra-cargoes. "They are united in one Commission, and, generally, the four seniors are termed the "President and Select Committee, who are assisted in the transaction of the business "of the factory by the remainder, and by writers and others holding subordinate "appointments, the whole being under special covenants for the performance of the "duties committed to them respectively . . . . . The residence of the supra-"cargoes and their assistants at the factory is only during the season of their intercourse with the Chinese merchants, for receiving and paying for the produce of the "country . . . . . .

"The business of the season being finished, and the ships laden and despatched on "their return to England, the supra-cargoes retire from the factory to the island of "Macao, a settlement belonging to the Portuguese, where they continue till the opening "of the ensuing season. The periods of the commencement and close of the season are "not distinctly laid down, being affected by various contingencies; and as to what is "termed the official year, according to the books of the factory, your Committee find "that no precise period has ever been fixed for its definition; but the balancing of "them has generally been governed by the conclusion of the season, which has been "most commonly in the months of February or March."

The position of the Company's representatives in China, and the nature of their dealings with the Chinese, remained substantially unaltered from 1812 up to the withdrawal of the Company's monopoly in 1834; and the above description therefore holds good up to that time.

The balance of the united English and Indian trade was at this time not unfavourable to China. The same Report shows that between 1792–93 and 1808–09, over 31,000,000*l.* were supplied to the Company's Canton Treasury from England and India for the purchase of tea and other products of China, over 26,000,000*l.* from England, and nearly 5,000,000*l.* from India; and that out of the 26,000,000*l.* the exports from

England of manufactures and metals provided less than 16,000,000*l.*, while the consignments of China produce to England exceeded in value 27,000,000*l.*; 2,000,000*l.* also were remitted back to India by the Select Committee, principally in bullion, for the Company's requirements in that country. The balance of trade with other countries in Europe, and also with America, appears to have been markedly in favour of China.

The value of the Indian exports to China (including opium) no doubt exceeded the value of the imports from that country, and there was necessarily therefore some export of specie from China to India for the adjustment of the balance. The opium trade also was contraband, and payment for the drug had to be made in specie. This led to the export of sycee, or native silver, which was strongly condemned and prohibited by the Chinese Government. As long, however, as the balance of the foreign trade remained favourable, the drain of specie to India was counterbalanced by imports of cash and bullion from Europe and America, and the attention of the Government does not appear to have been seriously drawn to the subject until some years later.

The Chinese, as they showed on many occasions, were not insensible to the advantages which they derived from foreign trade, but their pride and exclusiveness would not permit them to accord reasonable treatment to the foreign traders.

The connexion of the East India Company with the production of opium in India has already been fully described in the Historical Memorandum on the subject dated the 9th August 1894. The Directors were willing and indeed anxious that some of the opium produced in Bengal should reach China, but they took no direct part in the trade, and their servants were prohibited from smuggling, or from trading in the drug when employed upon the Company's service. The revenue derived by the Company from the Bengal monopoly was treated as a branch of the territorial revenue of India; and the Company, rightly or wrongly, drew a marked distinction between the sale of opium in Calcutta, with the knowledge that much of it was carried to China, and a direct trade in it in the Company's ships and by the Company's servants. The quantity of opium also which found its way to China at this time, was not large. Export from Western India was temporarily checked, and the quantity annually offered for sale at Calcutta by the East India Company was carefully limited, and a considerable portion of it was conveyed for sale to Java and the Eastern Archipelago. The trade was prohibited, but the question at this time was in no sense acute.

App. B. in this volume.

As regards the date of the prohibition, the first formal interdict appears to have been issued in 1799; but there is evidence to show that the drug was treated as contraband at Canton, at any rate, for some time before this.

The Court of Directors condemned the measures taken by Warren Hastings in 1781 to send a cargo of opium, on the Company's account, to Canton for sale, on the ground that it was beneath the dignity of the Company to be engaged in a clandestine trade; and the supra-cargoes reported to the Company that they had had considerable difficulty in disposing of the opium, as its importation was strongly prohibited by the Chinese Government.

Letter from the Canton Committee to the Court of Directors, dated 28th Dec. 1782, in a Collection of printed papers at the India Office relating to Warren Hastings' Impeachment.

Mr. Thomas Fitzhugh, in a letter written to Mr. Gregory on the 7th July 1782, gives the following description of the condition of the opium trade at that time:—

"The importation of opium to China is forbidden on very severe penalties. The opium on seizure is burnt; the vessel in which it is brought to the port confiscated; and the Chinese in whose possession it is found for sale punishable with death.

"It might be concluded that with a law so rigid, no foreigners would venture, nor any Chinese dare, to purchase this article, yet opium for a long course of time has been annually carried to China, and often in large quantities, both by our country vessels and those of the Portuguese. It is sometimes landed at Macao, and sometimes at Whampoa, though equally liable to the above penalties in either port, as the Portuguese are, so to say, entirely under the Chinese rule.

"That this contraband trade has hitherto been carried on without incurring the penalties of the law is owing to the excess of corruption in the executive part of the Chinese Government, which of late years has been carried to such a height that the Custom House officers have agreed, for 10 dollars a chest, to let opium go out of a ship at any time of the day."

App. 77 to the Ninth Report of the Select Committee of the House of Commons on the Affairs of the East India Company in 1783.

Mr. Fitzhugh's account of the penalties imposed upon the importation of opium does not accord with statements made by the officers of the Canton Government in 1836, and is also inconsistent with the terms of the edict issued in 1799; and the Chinese appear to have maintained a very correct record of all events connected with the foreign trade. In 1836, the Governor and Deputy Governor of Canton distinctly stated that in the reigns of Yungching and Kienlung, opium was included as medicine

Correspondence relating to China presented to Parliament in 1840, page 163.

in the tariff of duties at the port, and that there was no prohibition against its introduction. The prohibitory edict* of 1799, which is published in full below, shows that

Edict to prohibit the sale of opium, published at Canton on the 2nd Dec. 1799; forwarded by the Canton Committee to the Court of Directors in a letter dated 6th May 1801; in vol. 134 of manuscript China Records at the India Office.

* Edict addressed by the Hoppo, or Receiver General of the Customs, at Canton, for the information of the merchants appointed to trade with foreign nations.

Whereas I have received advices from his Excellency the Fouyuen (Deputy Governor), setting forth that "The ships of foreign nations have long since been permitted to import at Whampoa and Macao in the "province of Quangtong for the purpose of carrying on a trade by the free interchange of such commodities as "were in demand on the one hand and superfluous on the other. From this general rule the article only of "opium was excepted, a substance of whose composition we are unacquainted, but which is of a violent and "powerful nature and possesses a fœtid and odious flavour; being however remarkable at the same time, for a "quality of exciting and raising the spirits, it has been sought after and purchased by persons without fixed homes "or professions, who having prepared an extract from it, opened shops for the support of this branch of traffic. "The use of opium originally prevailed only among vagrants and disreputable persons, who occasionally "associated together for the purpose of partaking of this substance, but has since extended itself among the "members and descendants of reputable families, students, and officers of Government, many of whom are so "infatuated in their attachment to this drug, as to make an habitual use of it. Their inducement on this "occasion appears to be the power, which this substance communicates to those who partake of it, of not "closing their eyes for entire nights, and spending them in the gratification of impure and sensual desires, "whereby their respective duties and occupations are neglected. When this habit becomes established by "frequent repetition, it gains an entire ascendant, and the consumer of opium is not only unable to forbear from "its daily use, but, on passing the accustomed hour he is immediately seized with pains in the head and a "feverish heat, cannot refrain from tears or command himself in any degree. For relief, therefore, from these "painful symptoms and to regain his wonted health, he has necessarily recourse to the same pernicious substance. "When, at length, the gradual and progressive effects of this poison have pervaded the lungs and the whole "bodily frame, the sufferers with the pale and sickly hue of doves or small fluttering birds, are no longer within "reach of medical assistance; desirous, but in vain, of quitting so dreadful a practice, they would willingly "end it with their lives by tearing out their entrails in despair. The extraordinary expense of this article is "likewise to be noticed, each mace weight of which in the extract is exchanged for eight or nine mace in "money; and the constant use of it raises at the same time an excessive appetite for other kinds of food, "which the fortunes of the bulk of the community are unable to satisfy, and are therefore, in the course of a "few years, wholly dilapidated and wasted away. Of these, the infirm and weak perish gradually from want "and hunger, while the strong and vigorous become thieves and robbers, the ultimate ruin of all being thus "equally certain and inevitable. Others again, among the deluded and misjudging people, from trifling causes "or absurd conceits, take the premature resolution of swallowing a decoction of opium in wine, thus ending "their existence by means of readier access than the generality of vegetable substances usually esteemed "poisonous and destructive to the human frame. The pernicious effects arising from the use of opium were "formerly confined to the province of Fokeen and Quangtong, but have spread in the course of time through "the other provinces of the Empire, where the eagerness after the traffic and consumption of this article has "even exceeded that of its first introducers. Thus it is that foreigners by the means of a vile excrementitious "substance, derive from this Empire the most solid profits and advantages; but that our countrymen should "blindly pursue this destructive and ensnaring vice, even till death is the consequence without being "undeceived, is indeed a fact, odious and deplorable in the highest degree.

"Being now desirous of opposing the growing evil, for which it appeared necessary to revert to the sources "whence it sprung, we discover by a careful investigation that the article of opium is imported by foreigners, "and gains admittance into the Empire through the Bocca Tigris; whence, either by the pilot-vessels and "armed guard boats that are stationed there, it is conveyed up the river to Shin Shin (Dane's Island) or by "the means of small craft it is landed by degrees at Macao, and thence conveyed privately to the capital, "while the Custom House officers and guards at the different stations, though well acquainted with the "transaction, suffer it to pass without examination or inquiry; being doubtlessly bribed to a large amount "for that purpose? If the utmost endeavours are not now made to cut away the root and branches of the evil, "to what extent may they not proceed? We, therefore, publish these our general orders, for the information "of all officers, civil or military, at the different stations and districts of the province, that they may rigorously "examine into and punish the commission of this offence wherever it occurs, and at the same time we request "of his Excellency the Hoppo to issue positive orders and injunctions to the officers, attendants, and guards "of the several Custom Houses in his Department, that should henceforth any pilot-vessels, guard-boats, or "fishermen privately take on board, those pieces of mould or earth denominated opium, a strict search and "investigation shall be made, and the offenders apprehended and conveyed to the presence of the magistrate "to undergo such punishment as may be thought adequate to their guilt. If, notwithstanding these our "orders, bribes are again accepted, and the passage of this article connived at, it shall be traced with the "utmost exactness and rigour in the districts and stations through which it has been transported, that no pains "may be spared to effect a thorough reformation and amendment in these respects. Should any further mode "or regulation occur, that might tend to enforce, or render more effectual, these prohibitions and restrictions, "we request of his Excellency the Hoppo to give us due information thereof in reply to this our communica-"tion to him." On receiving the foregoing letter, I made a similar inquiry respecting the introduction of the substance denominated opium, and find that it is indeed imported into this country by foreign vessels, and have consequently issued orders to the Superintendent of the Custom House, at the port of Macao, to be communicated to the chief foreign residents and commanders of vessels belonging to that city, notifying our determination to prohibit the entrance of the article opium into that port; as well as our general orders to make every exertion to discover and inform us of it, if ever it should take place. Having replied to his Excellency the Fouyuen's communication, I proceed to extend the above orders to the Hong merchants, to which it behoves them to pay a strict and unreserved obedience, and communicate them to the chief supracargoes of foreign nations, that they may enforce the observance of this prohibition of the importation of opium on board the ships of their respective countries. But should, nevertheless, any ship hereafter import this article, none of the Hong merchants will be so imprudent or absurd as to become security, or undertake the disposal of her cargo; as I should in such event immediately report their conduct to the Viceroy and Fouyuen, by whom the merchant would be rigorously examined and punished for the offence without any mitigation or excuse being admitted. The Hong merchants shall, according to custom, reply hereto and make known to us their obedience to these commands.

Given at Canton on the 16th day of the 11th Moon of the 4th year of the Emperor Kia King.

opium had, for some time previously, been excluded from the commodities, in which trade by barter was permitted, and was therefore contraband; but it is very doubtful whether any penalty was provided by law either for its importation or sale. Penalties of death and confiscation of property may, however, have been threatened by corrupt preventive officers to increase their own gains.

The Select Committee, on hearing of the edict issued in 1799, wrote at once to the Governor-General in India, requesting that "a peremptory order might be issued at "the Presidencies to forbid any opium in future being taken on board Company's "ships bound to China," to avoid any possibility of the implication of the Company in a charge of illicit trading; and their prompt action met with the approval of the Court of Directors. The edict, as the Committee reported in 1801, and again in 1802, checked temporarily the introduction of opium into the Port of Canton, but the trade was carried on without interruption at the Portuguese settlement of Macao. Subsequent correspondence shows that the measures taken to prevent the importation of the drug were soon relaxed, and that the prohibition was not properly enforced even at Canton itself.

Extracts from letters from the Canton Committee to the Court of Directors, dated 2nd Jan. 1800, 6th May 1801, and 18th Jan. 1802, in vols. 126, 134, and 138 of Manuscript China Records at the India Office.

In 1813 the Chinese asserted a right to require the departure from China of a certain Mr. Roberts, who had been re-appointed by the Court of Directors as a member of the Select Committee; Mr. Roberts having, as President of the Committee, made himself obnoxious to them, on the occasion of the second occupation of Macao The Committee determined to resist this attempt at interference with the discretion of the Directors in the appointment of their own servants, and, adopting the favourite coercive measure of the Chinese, declined to continue commercial relations, until the orders requiring Mr. Roberts to leave China were withdrawn. The withdrawal of the Company's ships and the submission of a representation to Pekin on the subject of their grievances appear to have also been in contemplation. Mr. Roberts died at Macao while the question was still under discussion; and on 10th December 1813, the Governor issued an edict, which was considered by the Committee to be a sufficient disavowal of the right of the Chinese to interfere with the Company's servants, and trade was resumed.

Letters from the Canton Committee to the Court of Directors, dated 23rd Dec. 1813, and 22nd Feb. 1814, in App. II. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

Other troubles, however, ensued. The affairs of five of the Hong merchants were at the time in a very embarrassed condition, their debts to the East India Company and to individuals amounting to nearly 4,000,000 dollars; and the Governor, either from genuine indignation at this transgression of the trade regulations, or (as was supposed by the Select Committee) on the instigation of the other Hong merchants, was for a time inclined to dismiss and banish the insolvent merchants. The sanction of an Imperial edict was obtained in July 1813 to the establishment by Government authority of a Cohong system, under which a few of the senior Hong merchants were to be placed in entire control of the foreign trade, and were to have power to fix the prices of all foreign goods. The Select Committee very naturally objected strongly to this arrangement, and considered that, in the interests of the Company, and of the other European creditors, who had made an arrangement of their own with the indebted merchants, they were bound to do their best to prevent them from being officially declared insolvent. In such a case the debts of the insolvents would, as they said, have been thrown on the remaining merchants, and additional duties would have been imposed on the trade to provide a fund for repayment. The Committee therefore took steps to support the embarrassed merchants by paying Custom duties on their account, and continuing to them a share of the Company's business with the customary cash advances.

Letters from the Canton Committee to the Court of Directors regarding the embarrassed circumstances of some of the Hong merchants and the attempted establishment of the Cohong 1813–17, in App. II., as above.

In the course of these proceedings the violation of Chinese neutrality by Her Majesty's ship "Doris," involved the Committee in serious difficulties. The "Doris" appeared at Macao, in April 1814, with an American ship, which she had captured off the Ladrones, as a prize of war; and an American schooner lying at Whampoa was also attacked and captured by the "Doris" boats, though she was subsequently retaken by the Americans at Canton. Then an American brig arrived with a Bengal country ship, called the "Arabella," as her prize. Finding the "Doris" at Canton, the Americans tried to take the "Arabella" into Macao, but the Portuguese objected; and the Americans then abandoned the ship and the "Doris" took possession. The American merchantmen in Canton, which were ready to sail, were detained for some time in port, owing to the presence of the "Doris" off the mouth of the river, and the sympathies of the chief Hong merchant, who was pecuniarily interested in the cargoes of the ships, were consequently enlisted against the English.

Letters from the Canton Committee regarding their discussions with the Chinese Government in the season of 1814-15 in App. II., as above; and letter from the Court of Directors to Lord Amherst, dated 17th Jan. 1816, in Vol. 196 of manuscript China Records at the India Office. Also Auber's "China."

The capture of the American ship off the Ladrones, and the recapture of the "Arabella" were defensible, but the attack on the schooner at Whampoa was certainly unjustifiable. The Chinese objected to the prosecution of hostilities within their jurisdiction; held the Committee responsible—and called upon them to send the "Doris" away. This the Committee were, of course, unable to do, and the Chinese, to punish the breach of neutrality, refused supplies to the "Doris;" suspended the trade both of the English and Americans—and declined to grant port clearances to some Indian vessels then in the harbour. The Deputy Governor of Canton and the Superintendent of Customs also issued edicts interdicting the employment of native servants in the European factories.

The Committee protested, representing the impossibility of carrying on business at the Canton factory with European servants, but their address was ignored; the factory was visited without previous notice by a Chinese magistrate; a captain of one of the Company's ships was detained, when proceeding from Whampoa to Canton; and a linguist, in the service of the Company, named Ayeu, was seized and imprisoned, his offence, as supposed by the Committee, being his attachment to the English and the conveyance, in 1813, of a portrait of the Prince Regent to a Minister at Pekin, who had, when Governor of Canton, shown a friendly disposition towards them.

Further addresses, written in Chinese, to the Governor and Deputy Governor on the subject of Her Majesty's ships were returned unopened; and orders were issued by the Governor to the effect that he would receive no communication in Chinese, and that if the Committee wished to address him, they must do so in English. The Chinese language had been used apparently for some time by the Select Committee in their addresses to the Government, and the prohibition of communication in that language was held to be tantamount to a denial of the right of remonstrance. The Committee determined therefore to resist; directed in their turn the suspension of all commercial intercourse; detained the ships of private traders, which had just arrived from India, at Chuenpee, below the Bocca Tigris Fort; ordered all British ships to leave Whampoa, and all British subjects to leave Canton; and prepared to submit a remonstrance to the Imperial Court at Pekin.

The removal* of the Company's ships from Whampoa evidently alarmed the authorities; and the Governor issued an edict, in which the recapture of the "Arabella" was admitted to be proper, and the orders issued for the stoppage of the trade were in consequence rescinded. The Committee thought it advisable to avail themselves of the opportunity for negotiation thus offered, and suggested to the Hong merchants that the Governor should depute an officer to meet Sir George Thomas Staunton (who was then a member of the Committee) to discuss and settle the various differences that had arisen. The Governor assented, and Sir George Staunton accordingly proceeded to Canton with two other Company's servants, Sir Theodore Metcalfe and Mr., afterwards Sir John, Davis, on 21st October 1814. There they were met by the City Governor and two other mandarins, and negotiations began.

The seizure of the linguist, Ayeu, first formed the subject of discussion; and his arrest was explained to be due to the fact that he had purchased rank, though he had once been in a menial situation, and to be in no way connected with his relations with the English. At this juncture the Governor suddenly broke off the negotiations, and Sir George Staunton left Canton, warning all British subjects to comply with the orders issued directing them to quit the port; and proceeded down to the river to the Company's ships, which were anchored below the second bar. The commanders of the Indian ships protested against the suspension of their trade, and an effort was made by the Chinese to induce them to disregard the orders of the Committee and enter the river, but without success. Deputations of the Hong merchants were then sent to the Company's ships at Chuenpee to fetch Sir George Staunton back, and after some difficulty the negotiations were re-opened. The Committee, as soon as there appeared to be any prospect of a satisfactory termination to the discussions, ordered their ships up to Whampoa as a concession to Chinese dignity; and a settlement was eventually arrived at.

The Committee were obliged to rest content with the explanations offered in regard to the arrest of the linguist Ayeu; though in a report made by the Governor to Pekin about this time, (a copy of which was privately obtained), it was distinctly asserted that the linguist was concerned with the English in treasonable practices. The privilege of presenting addresses to the superior officers at Canton in the Chinese

* The flags of other European nations had at this time been driven from Canton by the naval superiority of Great Britain, and the Company's servants were therefore in an exceptionally favourable position for negotiation.

language "without previous explanation with the (Hong) merchants" was however conceded; and although addresses submitted were returned unopened on several subsequent occasions, the right of the Committee to submit their communications, through the merchants, under seal and in the Chinese language, appears to have been established from this time. Further, the prohibition of the employment of Chinese as servants, which had existed since 1740 under the authority of an Imperial edict, was modified to some extent; and the Select Committee received permission to employ Natives as coolies, porters, tea boilers and cooks, and in other similar capacities, though they were forbidden to engage Chinese as (Shawan) personal attendants. Ships of war visiting China for the protection of merchant ships were permitted to occupy their usual anchorages below the Bocca Tigris Fort; and some minor questions regarding the right of Chinese officers to enter the factory, the use of abusive language to the Company's servants, and other matters were also adjusted.

The proceedings of the "Doris" were extenuated and defended by the Committee, as far as possible, but the attack on the American schooner at Whampoa was felt to be unjustifiable, and they assumed the responsibility of promising that the Governor "should not again have occasion to complain of a similar act of offence." The subject was referred to from time to time during the negotiations, but was not, in their opinion, the real cause of the disputes which had arisen. "We conceive," they wrote, "the "origin of this discussion must be traced to a far different source; to the interested "views of a few individuals, endeavouring to place the European commerce at their "sole command; that in fact it has been pending some time, and would have equally "rendered necessary, in a year or two, the measures now adopted, even had we "succeeded in averting them for the present season."

Letter from the Canton Committee to the Court of Directors, dated 24th Dec. 1814, in App. II. to the Third Report of the Select Committee, as above

The result of the negotiations, though not regarded by the Committee as altogether satisfactory, undoubtedly strengthened the position of the Company at Canton, and appears to have been more favourable than the Government at Pekin was prepared to approve of.*

The firmness displayed led eventually to the abandonment of the Cohong scheme; and in December 1815 the Governor of Canton, after much deliberation, decided to allow the embarrassed merchants to continue their business. The Imperial Government at Pekin, also, on a report to this effect from the Governor, concurred as to the desirability of the measure.

In 1815 the Chinese made a half-hearted attempt to suppress the opium trade; and an order was issued by the Governor of Canton, promulgating an Imperial edict to search all ships at Macao. The local Chinese officers were not, however, inclined to exert themselves to enforce the order, and the Portuguese had a strong interest in evading its execution. The search of vessels at Canton also appears to have been contemplated, and the Committee were prepared to resist any attempt of the kind, but the measure, if ever intended, was not carried out.

Letter from the Canton Committee to the Court of Directors, dated 25th July 1819, in Vol. 272 of manuscript China Records at the India Office.

The orders issued by the Court at Pekin in the case of the linguist Ayeu, in 1815, show that the Chinese Government was at this time really apprehensive of intrigues between European Missionaries and disaffected natives, and was disposed to ascribe some serious outbreaks in the Canton Province, which had occurred in 1814, to the machinations of the Christians. Ayeu was banished to a place north of Nepal, and was required before leaving Canton to publicly trample on the cross to show that he had no sympathy with the Christian religion. "It perhaps," wrote the Select Committee, "can excite no surprise that the officers of Government should generally "throughout the Empire concur in endeavouring to find some other cause than their "own malpractices and misgovernment in these discontents."

Letter from the Canton Committee to the Court of Directors, dated 6th Feb. 1815, in App. II. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

A severe persecution† was, in the same year, carried on against the Roman Catholic converts in China.

Books on China by Auber and Medhurst.

The conduct of the Select Committee throughout the discussions and disputes of 1813–14 was approved by the Court of Directors, and Mr. Elphinstone, the President of the Committee, and Sir G. Staunton were said by Lord Castlereagh to have acted "under circumstances of great difficulty with ability, firmness, and discretion." The Directors, however, were dissatisfied with the position of the trade at Canton, and

Letter of instructions from Lord Castlereagh to Lord Amherst, dated 1st Jan. 1816, in manuscript China Records at the India Office.

* One of the mandarins attached to Lord Amherst's Embassy informed Sir G. Staunton on the 24th August 1816 that the footing upon which the trade was going on at Canton was by no means approved of. (Notes by Sir G. T. Staunton regarding the British Embassy to Pekin in 1816.)

† An edict was issued by the Chinese Government in or about 1812, in which the printing of books on the subject of the Christian religion and preaching the Gospel were made capital offences. (China: its State and Prospects, with especial reference to the spread of the Gospel; by the Rev. W. H. Medhurst).

were anxious to arrange some means of communication between their representatives in China and the Imperial Government at Pekin, as a check on the vexatious and capricious proceedings of the local officers; and, the Select Committee had urged on more than one occasion that a Mission from the British Government to the Court at Pekin was the only measure likely to be effectual in placing the intercourse between the two countries upon a satisfactory footing. Mr. Barrow also, who had accompanied Lord Macartney to Pekin, advocated the despatch of a second Embassy.

Letter from the President of the Canton Committee to the Chairman of the Court of Directors, dated 23rd Feb. 1815, in App. II. to the Report of the Select Committee of the House of Commons, dated 11th Oct. 1831; and Letter from Mr. Barrow to the Earl of Buckinghamshire, dated 14th Feb. 1815, in Vol. 197 of manuscript China Records at the India Office.

The Ministry therefore, in accordance with these representations determined to try once more the effect of direct negotiation with the Chinese Government. Lord Amherst was appointed Ambassador Extraordinary and Minister Plenipotentiary to the Court of Pekin, and Mr. Ellis and Sir George Staunton, who succeeded Mr. Elphinstone (before the arrival of the Embassy) as President of the Select Committee at Canton, were associated with him as Commissioners. Lord Amherst, however, was authorised to act on his own responsibility in the event of any difference of opinion between himself and his colleagues.

The Ambassador was commissioned to deliver a complimentary letter from H.R.H. the Prince Regent to the Emperor, and to enter into negotiations for the encouragement and promotion of commercial intercourse. The principal objects which he was instructed to try and secure were—

1. The protection of the trade of the East India Company from the sudden and capricious interruptions to which it was exposed at Canton; a more accurate definition of the Company's position and privileges; and the concession of the privilege of dealing with such native merchants as the supra-cargoes should think fit.

2. An improvement in the position of the Company's representatives at Canton, with permission to employ Chinese servants; and their exemption from abusive language and contemptuous treatment from Chinese functionaries.

3. The establishment of a channel of communication between the members of the factory and some public department or tribunal at Pekin, either by a British resident there, or by representations written in the Chinese language; and a confirmation of the right of using that language in all addresses and representations to the Local Government.

The desirability of obtaining permission for the Company's ships to trade at some "port to the northward" other than Canton was also impressed on the Ambassador; and the establishment of a "resident Minister or Agent at Pekin, through whom the "concerns of the subjects of the British Empire might be treated," was indicated as the most effectual method of securing the attainment of the objects in view.

As to the Kotou, or ceremony of prostration, which Lord Macartney had declined to perform, Lord Castlereagh's instructions directed the Ambassador to conform to all the ceremonies of the Chinese Court, which would not commit the honour of his Sovereign or lessen his own dignity, and, while not permitting any trifling punctilio to stand in the way of the success of the mission, to take the earliest opportunity of declaring that, as H.R.H. the Prince Regent had entirely approved of the ceremonial performed by Lord Macartney upon his Embassy to the Emperor's father, he had specially commanded him to adopt that precedent. A subsequent letter, however, from the President of the Board of Control appears to have authorised the Ambassador to perform the ceremony, if he should deem it expedient and conducive to the attainment of the object of the Embassy.

Suitable explanations also were to be given regarding the conduct of the captain of the "Doris" and the war in Nepal, if any discussion upon either subject were raised by the Chinese Government.

Lord Amherst's despatches to the President of the Board of Control dated 8th Aug. 1816, 12th Feb., 28th Feb., 3rd, 8th, and 22nd March, and 21st April 1817, in Vol. 197 of manuscript China Records at the India Office, and Sir G. T. Staunton's Notes of proceedings and occurrences during the Embassy.

The announcement of the intention of the Prince Regent to send an Embassy to the Emperor was made by a letter from the Earl of Buckinghamshire, who was then President of the Board of Control, to the Governor at Canton, which was delivered by the President of the Select Committee, and Captain Clavel of the Royal Navy. A report was submitted by the Governor to Pekin, and the Emperor in his reply expressed his readiness to receive the Ambassador, and promised him a favourable, gracious reception.

"As the English nation," he wrote, "offers presents and tenders its sincere goodwill, "with feelings and in language respectful and complaisant, it is doubtless proper to "allow the Embassy and presents to enter China, and the ship bearing them to "proceed to Tientsin."

The Embassy arrived at the mouth of the Peiho on 28th July 1816, and was there met by a Chinese officer of high rank, and two subordinate mandarins who had been

deputed for the purpose. At the exchange of ceremonial visits, however, Quang, the Chinese Legate, assumed precedence of the English Ambassador, a proceeding which augured ill for the success of the negotiations.

The Emperor appears from the outset to have been determined to insist on the performance of the Kotou, and the question was raised even before the Ambassador landed. Lord Amherst said that he was prepared to approach the Emperor in the most respectful manner possible, and this closed the discussion for the time. A hint also was given to the effect that the Emperor wished the number of persons in the Ambassador's suite to be limited to 50; but this point was not pressed; and the Ambassador was permitted to land with a modest guard of 23 marines and a band of musicians, the party numbering 75 in all, without servants.

The Embassy started up the Peiho on the 9th August for Tientsin, their boats carrying flags inscribed, as on the previous occasion, "Ambassadors Bearing Tribute." At Tientsin a second Chinese Legate, Soo by name, met them, and the Ambassador was informed that the Emperor proposed to receive them with even greater honours than had been shown to the former Mission, and that the honour of an Imperial banquet was to be there conferred upon them.

At the entertainment, which followed, endeavours were made to induce the Ambassador to perform the Kotou in front of a yellow screen representing the presence of the Emperor; the Legates, in their anxiety to persuade Lord Amherst to comply, asserting, first, that Lord Macartney had performed the ceremony, and afterwards that the Emperor Kienlung had disapproved of his European homage, although he had accepted it, and that it could not therefore be regarded as a precedent. Lord Amherst, however, declined to do more than bow nine times to the screen, and after much discussion the Chinese gave way. As soon as the entertainment was over, the Legates raised the question again, and inquired in what manner the Ambassador proposed to pay his respects to the Emperor. Further discussion followed, and in the course of it Lord Amherst offered to kneel* three times on one knee, and bow three times on each occasion, if such a modification of the English court ceremonial would be more conformable to Chinese etiquette. The Legates were much dissatisfied, and indulged in gloomy predictions as to the consequences of the Emperor's displeasure, but the Embassy was allowed to proceed on its way. A translation of the Prince Regent's letter to the Emperor was at this time communicated to the Legates; and exception was taken to some words which occurred in it, evidently from fear that the terms of equality upon which it was written, would be resented at Pekin. The Ambassador also was informed that the Emperor had issued an order to the effect that the band might be sent back to the ships, but this demand appeared so unreasonable that Lord Amherst did not comply with it. The departure of the English ships from the Peiho was then made the subject of a grievance, and a heated argument took place, the Chinese thinking, or pretending to think, that they had been purposely misled. The Ambassador, explained that it had been intended from the first, to follow the precedent of the former Embassy, and embark for the voyage to England at Canton, and the difficulty was in the end satisfactorily adjusted. The question of the Kotou, however, was vigorously pressed; the Legates urging the necessity of recognising the position of the Emperor as Suzerain of the world, the probability that a refusal to perform the ceremony would result in the failure of the Embassy, the risk of prohibition of the trade between Great Britain and China, and the danger that might be caused to them personally if the ceremony were not performed. Lord Amherst explained that it was impossible for him to compromise the dignity of his own Sovereign; and offered, much as Lord Macartney had done, to prostrate himself if a Chinese officer of equal rank would do the same before a picture of the King of England, or if the Emperor would promise that in the event of his ever sending an Ambassador to England, he would authorise him to perform the ceremony on his reception there. This proposal was at once rejected as wholly inadmissible; and further progress was stayed, until such time as the Emperor's pleasure should be ascertained. On the following day, orders were said to have been received directing that the Embassy should be brought on to Tongcheu, where two mandarins, of higher rank than the Legates, had been specially deputed to see the Kotou performed.

At Tongcheu a deputation from the mandarins in question called on the Ambassador, and informed him in an authoritative manner that the following day had been fixed for the ceremony. Lord Amherst replied curtly that he refused to attend, and the deputation left. The mandarins, one of whom, Ho, was a noble of high

* A person performing the Kotou is required to kneel three times and touch the floor three times with his forehead on each occasion.

rank, and the other, Moo, was President of the Tribunal of Ceremonies, then invited the Ambassador to a conference. The place of meeting was at some distance from the Ambassador's residence, but the only means of conveyance provided were covered carts and horses. Palanquins were first said to be not available, and then it was urged that the Emperor might be displeased if foreigners were allowed to use them so near Pekin. Lord Amherst, however, insisted, and palanquins were eventually supplied.

At the conference Ho (who is usually called the Duke in the records of the proceedings) informed the Ambassador that they had been deputed to see him practise the Kotou. Lord Amherst explained the reasons for his refusal to prostrate himself. The Duke replied that the ceremony must be performed; if the Ambassador consented, he would conduct them to Court; if not, he would send them away at once. Lord Amherst then produced a memorial, (which had previously been prepared), appealing to the Emperor himself for orders on the subject, and requested that it might be transmitted. The Duke took the memorial, and the interview ended.

The form of the memorial was then made the subject of discussion. Some verbal alterations were made to meet the wishes of the Chinese, but other alterations which they required, were refused. The strongest opponent of the Kotou was Sir G. Staunton, who had had better opportunities than his colleagues for appreciating the true significance of the ceremony, and the possible consequences of its performance. This fact appears to have come to the knowledge of the Chinese; and an objection was raised to the constitution of the Embassy upon the ground that a man who was engaged in trade was unfit for such an appointment. Sir G. Staunton's knowledge of the Chinese language also was referred to by one of the subordinate mandarins as affording a means for communicating with Chinese traitors; and the guard over the Embassy was doubled with the avowed object of preventing any such correspondence. An impression even was created that Sir G. Staunton might be forcibly separated from the other members of the Embassy; but there hardly appears to have been any sufficient ground for this apprehension. Lord Amherst cut short the attempt to assail his colleague, and addressed a letter to the Duke to inquire what was the Emperor's pleasure in regard to their departure, as it was understood that the memorial to the Emperor on the subject of the ceremony had not been forwarded. On receipt of this letter, Ho invited the Ambassador to another conference, and further discussion ensued. The Duke adopted a more conciliatory tone; and the Ambassador took the opportunity of cautiously sounding him how far the performance of the ceremony would be likely to assist the Embassy to attain its objects, particularly the establishment of a direct channel of communication between the Select Committee of the East India Company at Canton and the Imperial Government at Pekin. The Duke replied that he would personally support any such proposal if the Kotou were performed, and that the Emperor would be pleased and gratified by its performance; but he could not definitely say how the proposal would be received. After this interview the question of the ceremony was reconsidered. Lord Amherst and Mr. Ellis were disposed to give way; and the Ambassador informed Sir G. Staunton that they were prepared to yield the point, if, in his opinion, the result would not be detrimental to the interests of the East India Company. Sir George Staunton, however, after consulting the other gentlemen from the Company's factory who were with the Embassy, adhered to his original opinion, and declared against the ceremony. This settled the matter, and a letter was sent by Lord Amherst to the Duke informing him that the question had again been fully considered, and that the Kotou could not be performed; the ceremony, proposed at Tientsin, representing the utmost limit of possible concession.

All hope of any satisfactory arrangement appeared to be at an end; but to the surprise of everybody the Duke called on the Ambassador the same afternoon and informed him it was the Emperor's pleasure that the Embassy should be immediately conducted to Pekin, and thence to the summer palace at Yuen Ming Yuen. This announcement was so entirely unexpected that some doubts were felt as to the Duke's sincerity: and Sir G. Staunton, at Lord Amherst's request, reminded him more than once that the Ambassador, although much gratified at the invitation, would only proceed to Court on the distinct understanding that the Kotou would not be insisted upon. The Duke's assurances were somewhat vague; but the Ambassador was given to understand that the question was settled, and that he need not anticipate any difficulty on the score of the ceremony; and one of the two Legates, who were on duty with the mission, subsequently gave a more explicit assurance to this effect. The programme of the ceremonial to be observed at Court was then given to the Rev.

Morrison, who was acting as Interpreter, by one of the subordinate Chinese officials, with a memorandum of the proceedings at the time of Lord Macartney's reception, in which it was distinctly recorded that the Kotou was performed. An intimation at the same time was given to the effect that the Embassy would be received by the Emperor on the 30th August. The programme showed that the Ambassador and his colleagues were to be kept at a distance from the Emperor; and the letter from the Prince Regent was to pass through the hands of two Chinese officers before delivery, instead of being presented direct by the Ambassador to the Emperor, as on the occasion of Lord Macartney's reception by Kienlung.

The Embassy started for Pekin from Tongcheu, a distance of 24 miles, at a quarter past 4 p.m. on the 28th August, and reached Pekin shortly after midnight on the morning of the 29th. A halt was made at an inn half way, and some indifferent refreshments were provided; and a subordinate Chinese official hinted there that the Ambassador would be received by the Emperor on the morning of his arrival. The hint, however, was unheeded, as the information conveyed appeared to be incredible. At Pekin the Englishmen were conducted through the suburbs, outside the city wall, to the road to the summer palace at Yuen Ming Yuen, and a start for the palace was made at once. The house prepared for their reception was on the Pekin side of the palace: but they were taken straight to the palace, and arrived there at 4.30 or 5 a.m. On alighting, the Ambassador was informed by one of the subordinate officials in attendance on the Embassy, that the Emperor had changed the date fixed for the reception, and that the Duke was now waiting to conduct him to the Emperor's presence. Lord Amherst expressed his extreme surprise and annoyance at the manner in which they had been treated, and objected strongly to appear before the Emperor in the condition he then was, fatigued and indisposed, in his travelling dress, without the insignia of his office, and without the Prince Regent's letter to the Emperor. He however declared himself willing to submit to the Emperor's pleasure, but requested that the facts might be communicated to him, and that he might be moved to postpone the audience until the following day. The Duke and his colleague, Moo, then came and pressed the Ambassador to consent, the Duke even grasping Lord Amherst's arm with the apparent intention of leading him into the Emperor's presence, and giving him a verbal assurance that the ceremony, which he had agreed to, was all that would be necessary. Lord Amherst, however, was firm; pushed the Duke away, and refused to move until his message had been conveyed to the Emperor and His Majesty's pleasure ascertained. The bearing of the mandarins at this time was so violent and dictatorial that some apprehension of force being used was felt by the gentlemen present. The Duke left, and in a short time returned with a civil message from the Emperor to say that he would receive the Embassy on the following day, and would in the meantime send his own physician to attend on the Ambassador.

The Ambassador and his companions were then conducted back $1\frac{1}{2}$ miles along the road by which they had come, to the house prepared for their accommodation. Between 8 and 9 in the morning the Court physician arrived to see Lord Amherst, who informed him that his indisposition was merely due to the hurry and fatigue of the journey, and that he already felt relieved. Seeing that there was no need of his services the physician departed, and his report of the interview appears to have incensed the Emperor, who peremptorily ordered that the whole Embassy should be instantly conveyed back to Tongcheu. Accordingly, after a few hours' rest, the party started on their return journey; and again travelling all night, reached Tongcheu at 6 a.m. on the 30th August, the date originally fixed for their reception.

Late in the evening the two Legates visited the Ambassador and suggested, by the Emperor's orders, a partial exchange of presents. Lord Amherst, while expressing his indignation at the treatment they had received, agreed readily to this proposal, as it appeared to indicate a change in the feelings of the Emperor, and a desire to maintain unimpaired the amity existing between the two nations. The portraits of the King and Queen, a case of maps, and a collection of prints and drawings were selected by the Legates, and three articles—a white agate sceptre, a string of sapphire beads, and a box of embroidered purses—were presented, in return, for the Prince Regent.

The Prince Regent's letter was not delivered, and it seems probable that the proposal for an exchange of presents was due as much to a desire on the part of the Chinese to secure the payment of tribute as to any anxiety for the future maintenance of friendly relations.

* Lord Amherst, in his Despatch to the President of the Board of Control, dated 22nd March 1817, says, that this programme was received some days after the Embassy had left Pekin for Canton. In the above account I have followed Sir George Staunton's version of the matter, which seems *primâ facie* to be more probable.

The members of the Embassy began the descent of the Peiho on the 2nd September, and reached Canton on 1st January. They were, on the whole, well treated throughout the journey, an edict issued by the Emperor directing that they should be treated with civility and attention, and that the troops should be drawn out regularly, and military honours shown so as "to excite at once fear and gratitude." At Canton, at a public State conference between the Ambassador and his colleagues and the Governor of Canton and other Chinese officers, a letter from the Emperor to the Prince Regent, was delivered by the Governor of Canton, and this function closed the proceedings.

No business was transacted or even discussed, except in an informal manner, on the occasion of the last conference at Tongcheu between the Ambassador and the Duke and Moo on the subject of the Kotou, and no reference was made by the Chinese to the proceedings of the Doris. or to the war in Nepal. The Emperor's letter explained the reasons for the dismissal of the Embassy from the Chinese standpoint, and informed the Prince Regent that it would be sufficient, in future, to pour out his heart in dutiful obedience, and that there was no necessity for him to send another Ambassador to China. The letter, which is a singular mixture of arrogance, plausibility, and mendacity, is published below in full :—

Translation of a letter from the Emperor of China to H.R.H. the Prince Regent: received Jan. 7th, 1817; in Vol. 197 of manuscript China records at the India Office.

The Supreme Potentate, who has received from Heaven and revolving nature (the government of the world) issues an Imperial Mandate to the King of England, with which let him be thoroughly acquainted.

Your country, situated remotely beyond a vast ocean, tenders an offering of devotedness, and turns with ardent affection to the transforming influences* (which emanate from this land). Formerly, in the 58th year of Keen-Lung, when the reign of the exalted, the honourable, and the immaculate Emperor approached its close, you sent an Ambassador across the seas to our palace. At that time your Ambassador with veneration and respect performed the ceremony without excess or defect, and in the observance in the forms of decorum, he was enabled to look up and receive (Imperial) favour and affection; to see His Majesty; to be entertained at a banquet; and to have gifts, numerous and elegant, conferred upon him.

This year, you O King, again sent an Ambassador to present a written representation, and who was provided with the productions of (your) territory to introduce (to me).

I, the Emperor, considering that you, O King, were truly sincere in feelings of respect and obedience was exceedingly pleased; caused forthwith former records to be examined; and regularly enjoined a great number of officers to wait for your Ambassador, that on the day of his arrival he might respectfully see the Imperial person, and be entertained with a banquet, in all things exactly according to the ceremonies of the preceding reign.

Your Ambassador began to hold intercourse at Teen-tsin. I appointed officers to be there to confer an Imperial banquet. Behold I, when your Ambassador was to return thanks for the banquet, he would not be obedient to the prescribed ceremonies.

I, the Emperor, in reference to a petty officer of State, from a remote country, did not deem forms and ceremonies of great worth; it was a matter in which indulgence and compassionate forbearance might be shown and therefore especially ordered great officers of State to be accommodating with your Ambassador, and when he arrived at Pekin, to tell him that in the 58th year of Keen-Lung, your ambassador, in performing the ceremony, completely (or always) knelt and bowed the head to the ground, according to the stated forms; upon this occasion, how could a change be admitted?

Your Ambassador told my great officers, face to face, that when the time came he would obey, and would perform the kneeling and bowing the head to the ground; that no excess or falling short of the established forms should occur.

My great officers, in conformity to and in reliance upon this declaration, reported it to me, and I sent down my pleasure that on the 7th day of the 7th moon, your Ambassador should be ordered to see the Imperial person; that on the 8th, in the great hall of light and splendour, a banquet should be conferred, and rewards bestowed; and again, that in the garden of mutual pleasure, food should be conferred; that on the 9th, leave should be taken, and on the same day, it should be granted, to ramble amongst the hills of ten thousand ages; that on the 11th, at the gate of great concord, rewards should be conferred, after which (he) should repair to the board of rites to a banquet; and that on the 12th, he should be sent to proceed on his journey. The day of performing the ceremony and the etiquette to be observed, my great officers all previously stated to your Ambassador.

29th August.

On the 7th, the appointed time for your Ambassador to see the the Imperial person, he had arrived at the Palace, and I, the Emperor, was about to enter the hall of audience. The Ambassador suddenly affirmed that he was exceedingly ill, and could not move a step. I thought it a possible case that the Ambassador was taken suddenly ill, and therefore ordered the Assistant Ambassador to enter and see me; but both the Assistant Ambassadors also affirmed they were ill. This was rudeness which was never exceeded. I did not inflict severe chastisement, but sent them away the same day with an order to return to their country.

As your Ambassador did not see the Imperial person, it was also inexpedient to send in the written representation brought from you, O King. It is in the state it was, carried back by your Ambassador. It is considered that you, O King, from the distance of several times ten thousand lee, respectfully presented a written representation, and duly offered up presents; that your Ambassador's inability to communicate in your behalf, with profound veneration and sincere devotedness, is his fault. The disposition of profound respect and obedience felt by you, O King, I indeed really perceive. I took from amongst the articles of tribute only maps, landscape prints, and portraits, and highly commend your feeling of sincere devotedness just the same as if I had received them all. There were conferred upon you, O King, a white corundum Joo-ee (an emblem of prosperity); a string of Court beads; two large purses and eight small ones, to manifest tender and indulgent treatment.

* It is maintained that the principles of right reason, and social order were first and best understood in China, which is supposed to be situated in the middle of the earth. The tribes and nations which occupy the extremities of the world turn to China as the centre of civilization.

Your country is distant from the central and flourishing Empire (China) too remotely. To send an Ambassador such a distance over the waves of the sea is not an easy business. Further, your Ambassador cannot understand and practise the rites and ceremonies of China. The subject involves a severe labour of the lips and tongue, to hear which is by no means pleasant. The Celestial Empire does not value things brought from a distance. All the extraordinary and ingenious productions of your country, also, it does not look upon as rare pearls.

That you, O King, should preserve your people in peace, and be attentive to strengthen the limits of your territory, that no separation of that which is distant from that which is near, should take place, is what I, the Emperor, in truth highly commend.

Hereafter there is no occasion for you to send an Ambassador so far, and to be at the trouble of passing over mountains and crossing seas. If you can but pour out the heart in dutiful obedience, it is not necessary at stated times to come to Court, ere it be pronounced that you turn towards the transforming influences which emanate from this land. This Imperial Mandate is now given, that you may for ever obey it.

Kea-King, 21st year, 7th moon, 20th day. (September 11th, 1816.)

The failure of the Mission may have been partly due to the influence at Court of the Governor of Canton, who had shown himself to be hostile to the English, and who had naturally a strong object in preventing direct communication between the supra-cargoes and the Government at Pekin; but the principal cause was the arrogance* of the Emperor Kea-King and his advisers. It is probably true, also, as stated by the Legates at Tientsin, that the reception of Lord Macartney by Kienlung, without performance of the Kotou, had been resented at the time, and Kea-King and his advisers were determined to tame the English pride.

The edicts on the subject show that the Chinese Government thought it advisable to give a somewhat different version of the occurrence at Pekin from that furnished to the authorities at Canton, whose sympathies were known to be anti-English. They appear also to show that the Emperor had not at any time agreed to dispense with the Kotou ceremony, and that the assurances given by Ho and the Legate to that effect were without foundation.

In an edict, published at Pekin on 4th September 1816, the Chinese legates Soo and Quang were censured for conveying the Ambassadors further north, after they had refused to perform the Kotou on the occasion of the Tientsin banquet. The Duke and his colleague Moo were censured, first for conducting the Ambassadors to Court, although they had not practised the ceremony, and secondly, for not explaining that the absence of their Court dresses was the true reason for their inability to appear before the Emperor at the time fixed for their reception; and the dismissal of the Embassy was ascribed to their mistakes and mismanagement. All the Ministers of State, also, who were present on the occasion were blamed for not making a true report of the circumstances to the Emperor, and soliciting him to alter the date fixed for the reception of the Embassy. "The affair," ran the edict, in which Ho has "erred, is in itself a small one; yet even in this, the officers of the Court were destitute "of any expedient for the service of their country."

A subsequent edict, published at Pekin on 25th October, gave a similar version of the occurrence; but in an edict dated 25th September, which was addressed to the Governor and Deputy Governor of Canton, the dismissal of the Embassy was ascribed entirely to the failure of the Ambassador and his colleagues to perform the Kotou, and to their refusal, under the pretext of illness, to appear before the Emperor at the time fixed. The Governor also was directed to invite the Ambassadors to a conference and to take leave of them in a somewhat discourteous speech. "Your good fortune," he was to say, "has been small. You arrived at the gates of the Imperial house and were "unable to lift your eyes to the face of heaven," &c., &c.

The speech, however, was not made; and Lord Amherst appears to have been treated with much more respect at Canton than at Pekin. As he wrote himself, he had at Canton for "the first time, an opportunity of assuming to its fullest extent the "character and public appearance of His Majesty's Ambassador." Despatch dated 21st April 1817.

Lord Amherst and Mr. Ellis left Canton on the 28th January 1817 in H.M.S. "Alceste"; and Sir George Staunton resumed his appointment as President of the Select Committee at Canton.

The Chinese officers who had been connected with the Embassy were visited, in accordance with the usual Chinese practice, with the Emperor's displeasure for their supposed mismanagement of the business. Ho, as Lord Amherst reported, was sentenced

* The following is said by Sir John Davis to be an accurate translation of the fundamental maxim of Chinese intercourse with foreigners: "The barbarians are like beasts, and not to be ruled on the same "principles as citizens. Were anyone to attempt controlling them by the great maxims of reason, it would "tend to nothing but confusion. The ancient Kings well understood this, and accordingly ruled barbarians "by misrule. Therefore, to rule barbarians by misrule is the true and the best way of ruling them."

to forfeit the sum allowed him as Duke for five years; Moo, his colleague, who was an old man, was dismissed altogether, and the two Legates, also, were punished and degraded.

Letters from the Canton Committee to the Court of Directors in App. II. to the Third Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

In the meantime, while the Embassy was on its way across China, serious difficulties arose at Canton in consequence of the hostility of the Governor towards the English. The "General Hewitt," a merchant ship belonging to the East India Company, which brought the presents for the Emperor to the Peiho, returned to Canton for a cargo of tea. The Chinese objected to her entering the port, surrounded her with guard boats as she lay at the second bar above the Bocca Tigris, and raised the question whether she could with propriety receive a cargo. The Select Committee acted with vigour, if not with violence. The captain was ordered to bring his ship up the river, and to open fire, if his passage was obstructed and the ship fired at by the Chinese. No opposition, however, was offered, and the ship was anchored at Whampoa. Addresses to the Governor and the Superintendent of Customs on the subject of these proceedings were returned by the Hong merchants unopened, a measure which the Committee characterised as a violation of the agreement of 1814; and the Committee then sent a deputation with an address into the city, and delivered it to a mandarin at the gate of the Governor's palace. This led to the seizure, confinement, and torture of the Company's compradore (purveyor), with the object of extracting from him information as to the native, who had shown the way to the Governor's house. One of the Company's linguists also was seized and imprisoned.

An edict from the Emperor, received by the Select Committee on the 8th November, granted the cargo required; but difficulties were raised by the Governor in regard to the shipment of the returned presents, and the question was still under discussion, when H.M.S. "Alceste" and "Lyra" arrived at the port of Canton to convey the Ambassador and his suite back to England.

The ships anchored at Lintin on 2nd November, and the "Alceste" was there visited by a mandarin, who said that he had been deputed by the Governor. Captain Maxwell, the commander, expressed to him a wish to pass the Bocca Tigris and enter the port, as had been done by H.M.S. "Lion" on the occasion of Lord Macartney's mission. Fair promises were given, but the communication produced no result; and after a few days a second mandarin appeared and declared that the first mandarin had received no authority from the Governor to act in the manner he had done. Captain Maxwell then required proof of the authority by which he had visited the ship, and the mandarin promised to bring back a communication from Canton in five days. Six days passed, but he failed to return; and Captain Maxwell moved up the river in the "Alceste" as far as Chuenpee below the Bocca Tigris. A flotilla of Chinese junks there attempted to stop his passage; and after first firing blank cartridge, a salute which was returned in kind by the "Alceste," the Chinese opened fire with ball. One shot from the "Alceste," however, silenced the fire, and, the wind failing, the "Alceste" came to anchor below the forts. In the evening, when the wind admitted, the "Alceste" weighed anchor and proceeded up the river. Fire was at once opened from the forts, and the "Alceste" was struck; and Captain Maxwell determined to retaliate. A broadside at close range silenced all the forts on one side of the river; and the "Alceste" then went on her way to Canton without molestation. As soon as the passage had been forced, an edict was published in the city, granting permission to the frigate to enter the river, as a special concession on the occasion. The firing at the mouth of the river was said to be a salute.

The "Lyra," which followed the "Alceste" after a few days, passed up the river without molestation.

The Company's compradore and linguist were released at the beginning of December, but the Governor's hostility to the English was not abated. The Police Magistrate was privately ordered to seize several natives in the service of the supracargoes, and although this order was not executed, the loading of the "Hewitt" formed the subject of further protracted discussion. The Committee, however, were firm; and the presence of the ships of war gave weight to their representations. The "Hewitt," therefore, was eventually allowed to receive her full cargo, on the understanding that she should be detained until the Ambassador's arrival, in order that the returned presents might be shipped in her, if he should so desire; and the discussion was in this way brought to a close.

The ill-feeling, generated by these disputes, did not pass away for some time. In March 1817, the Company's press at Macao, which had been established for the

printing of a Chinese Dictionary, compiled by the Rev. Dr. Morrison,* was entered by a number of armed Chinese in the service of the police, without permission from the Select Committee, and without, apparently, any previous intimation. The proceeding justified a protest, but the Committee were unnecessarily indignant, and submitted an intemperate remonsterance, threatening that the invasion of houses under their control would in future be repelled by force.

The pretensions of the Chinese to universal sovereignty excited, apparently, more amusement than indignation in Great Britain, and the Emperor's vagaries were accepted with equanimity. The Embassy had been despatched at the expense of the East India Company, and its rejection was evidently regarded more as a commercial rebuff than as a national affront. The treatment which the Ambassador had received, however, effectually precluded any further attempts to negotiate with the Chinese Government; and was in this way an indirect cause of the war that followed the withdrawal of the Company's monopoly of the China trade.

Letter from the Court of Directors to Lord Amherst, dated 17th Jan. 1816, in Vol. 196 of manuscript China Records at the India Office.

The Court of Directors had, at the time of Lord Amherst's departure from England been disposed to take a high tone; and in a letter to him regarding the causes, which had led to the despatch of the Mission, and the objects, which were to be sought by negotiation, they discussed the reasons which the Chinese might have, for avoiding any continuance of harsh and oppressive measures. "The Chinese," they wrote, "would "probably not carry their estimate of British magnanimity so far as to expect that if "they were by violence to shut us out from their trade or by a series of oppressive and "vexatious proceedings to force us to abandon it, we should remain perfectly passive "under the great losses and privations that must thus ensue; and they cannot but be "aware that nothing would be more easy for us than to take possession of their valuable "islands to the eastward, particularly Formosa and Luckieu, which would enable us to "intercept the whole of their Asiatic maritime trade, and to carry terror to the neigh-"bourhood of Pekin itself. Justice forbids, and we trust ever will forbid, that such "speculation should be really entertained in this nation. Their withdrawing from us "the liberty of trading in their country could never be a legitimate cause of hostility "against them; but the Chinese Government, if they were in an unfriendly inhos-"pitable spirit, by inequitable conduct to force to a close a pacific intercourse, which "has subsisted so long, and in which this country has embarked so great a capital, "could hardly fail, reasoning on their principles, to advert to the means we should "possess of resenting such harsh and injurious proceedings."

The result of the Mission, however, convinced them that nothing was to be gained from Pekin by negotiation or remonstrance; and as the British Government had no intention of making the treatment of the Embassy and the state of the trade relations a casus belli, they were obliged to adopt a policy of conciliation and submission. The China trade produced the profits which enabled them to pay their dividends, and afforded also the means by which Indian remittances were made to England, and they were determined to maintain it at all hazards.

Letter from the Court of Directors to the Select Committee at Canton, dated 12th March 1817, in Vol. 196 of manuscript China Records at the India Office.

On receiving, therefore, the news of the dismissal of the Ambassador, and of the discussions, in which they had been involved with the Chinese, regarding the "General Hewitt," with an account of the measures taken by the "Alceste" to force a passage into the Canton River, the Directors wrote at once to inform the Select Committee that without expressing any opinion on the merits of the Canton disputes, they were decidedly of opinion that, whatever measures the Chinese authorities might adopt, either in regard to the trade or the Company's servants, or in regard to the ships and officers of His Majesty's navy, it was their duty to "adopt a system of moderation and "conciliation in all their intercourse," so as to preserve, if possible, "to the Nation in "general, and to the East India Company in particular, the continuance of the highly "beneficial commerce between the English and the Chinese."

They had, they said, spared neither trouble nor expense in an attempt to rectify the evils of which the Committee had complained; and as any opposition, which the Committee could offer to measures taken by the authorities, was not likely to be more successful than the attempted intervention of the British Government with the Court at Pekin, they must in future confine themselves to remonstrance against any unjust or arbitrary proceedings, and avoid any opposition, which might have the effect of endangering the trade, until the Directors should have had an opportunity of carefully considering and passing orders on the subject.

The Committee also were expressly instructed not to concern themselves with questions regarding the honour of the nation. "If," as they wrote, "this is the just "and expedient course for you to pursue, when the interests of the Company are at

* Dr. Morrison was the first Protestant missionary to China. He arrived at Canton in 1807.

" issue, it must be much more so in all cases in which the interests or honour of His " Majesty's flag are concerned, because in cases of that kind, the judgment and " decision must depend, in the first instance, on His Majesty's officers in China, and " ultimately on His Majesty's Ministers in London.

" Upon the whole, therefore, we have thought it right to take this opportunity to " enjoin the most scrupulous attention to a line of proceeding with the Chinese autho- " rities, which shall evince a moderate and conciliatory temper; that whatever course " events may take, our servants at least shall stand acquitted to us and to the country of " being the cause of any measures, which in the end may put to hazard the very benefi- " cial and important trade which has been carried on with China for so many years."

Letter from the Court of Directors to the Canton Committee dated 7th April 1818, in Vol. 196 of manuscript China Records at the India Office.

Similar instructions were given in a subsequent letter, written when the Directors were in full possession of the facts which had led to the failure of the Embassy and to the discussions with the Canton Authorities. The tone of the address submitted to the Governor, in regard to the entry of the printing house at Macao, was condemned; and the Committee were ordered to abstain in future from harsh and violent language, and to study, by the moderation and discretion of their conduct, to avoid under all circumstances such disputes or disagreements with the Authorities as tended to produce that hostility of feeling, which had led on several occasions to an interruption of commercial intercourse. " The measure of stopping the trade," wrote the Directors, " cannot be resorted to by our representatives without the most serious inconvenience; " and although that measure hitherto may have produced all the benefits expected " from it, its repetition may possibly not merely weaken, but destroy its force altogether. " It is indeed a measure so pregnant with difficulty and danger to our service, that " nothing but the most imperious and urgent necessity can justify a recourse to it."

They added, however, that they were not inclined to abandon the immunities and privileges hitherto enjoyed, and that they did not believe the interests of commerce would be preserved by " servile and abject submission " any more than by " the use of strong and threatening language."

Edict by Commissioner Lin to the Hong merchants, dated 18th March 1839; pages 352-355 of the Correspondence relating to China presented to Parliament in 1840.

Letter from the Canton Committee to the Court of Directors, dated 8th Dec. 1817, in App. 11 to the Third Report of the Select Committee of the House of Commons dated 11th Oct. 1831; and letter from the Canton Committee to the Court of Directors dated July 25th 1819, written in a reply to a letter from the Court dated 8th May 1818, in Vol. 272 of manuscript China Records at the India Office.

The opium trade appears at this time to have attracted the serious notice of the Chinese Government, and in 1816 an Imperial edict was issued holding the Hong merchants personally responsible for enforcing the prohibition against it, and for expelling from the port of Canton, any vessel which was found to have brought opium as part of the cargo. In 1817 an American ship, laden with opium and dollars, was attacked by robbers in the Macao Roads, and several seamen were killed and the cargo was plundered. The Chinese Government, on the representation of the United States Consul and the Select Committee of the East India Company, took strong measures against the robbers. A number of them were arrested and a considerable part of the booty was recovered, and three of the robbers were tried and executed at Canton. The money recovered was restored, but the opium was confiscated as contraband; and the captain of the ship was reprimanded by the City Governor for trading in a contraband article. The senior Hong merchant, also, who was known to be largely interested in the American trade, was made personally responsible, and was fined 150,000 dollars, though he had not given security for the ship.

The Hong merchants, to protect themselves and satisfy the authorities, proposed that the captain of each ship trading to China should be required to execute a bond containing an engagement not to trade in opium; and the captains applied to the Select Committee of the East India Company for advice. The Committee considered that this would be an objectionable interference with commerce, and issued orders " forbidding the signature of any such instrument "; and the project, after some correspondence between the merchants and the Committee, was abandoned for the time. In writing to the Court of Directors, the Committee defended their action in forbidding the execution of bonds on the ground that the opium trade was established by custom, and as custom was invariably relied on by the Chinese as the guiding principle of commercial relations, it was right that they should themselves be bound by it. " Nations in general," they wrote, " must be admitted to possess the " right of regulating their commerce according to their separate views of policy: but " China forms an exception to civilized countries where trade is regulated by treaties, " (and) foreigners have equally with natives the protection of the laws. When custom " is invariably referred to by one party as the rule of action, it is but equitable that " the advantages of that test should be reciprocal."

The seizure, however, soon after, of a quantity of sycee or native silver, again brought the question to the front; and threats of the intention of the Government to search all ships in the river caused the commanders of the Indian ships to appeal once more to the Select Committee. The Committee resolved to support the Indian traders, and

oppose the search, if attempted; and the Captain of H.M.S. "Orlando" was invited to anchor at Chuenpee, and to proceed, if events should so require, up the Canton river to Whampoa. The advisability of the annual visit to China of a ship or ships of war was also suggested about the same time to the Admiral on the Indian station. No search, however, was made, owing, as the Committee supposed, to the publicity of the resolution, which they had formed, to resist it.

The action of the Committee on this occasion, whatever may have been their intention, had the effect of implicating the Company in the opium trade, and in the smuggling of sycee silver, to which it gave rise; and the application made for assistance to the Captain of the "Orlando" gave particular umbrage to the Court of Directors. The monopoly of the China trade was more valuable to the Company than the Indian opium revenue, and the Directors had no intention of allowing the trade in opium, carried on by private merchants, to interfere with their commercial dealings at Canton, or involve them in discussions with the Government. The Committee, as they pointed out, had no very definite information as to the intentions of the Chinese in regard to the search of vessels in the port; and the demand made by the Hong merchants for the execution of bonds was, they considered, not unreasonable, as the merchants were held responsible for smuggling from any ship for which they had given security. The Committee therefore were formally censured, and were ordered to permit the execution of bonds rather than engage in any discussion with the authorities upon the question; and were directed also to abstain in future from making the captains of the King's ships parties to any dispute in which they might become involved, and to interfere no further in differences between the commanders of Indian ships and the Chinese than to offer either remonstrance or recommendation.

The Committee, in July 1819, made an attempt to justify their proceedings, and show that they had acted in the interest of commerce generally, and had no desire to support the illegal traffic in opium or sycee silver; but the facts were unquestionably against them. Some remarks, which they made on the subject of the opium trade, and the probable result of the concession of the right of search of foreign vessels, are, however, worthy of reproduction. "We must consider, at the same time," they wrote, "that the officers of Government are never sincere in their declared "intentions of suppressing illicit traffic, more particularly the trade in opium, as it "has ever been one of the most fruitful sources of their emolument, and considered "one of the principal advantages of their situations. While it remains notorious that "the Imperial edicts for the prevention of this trade are annually issued by them with "one hand while large bribes are received by the other, it can never be imagined that "any new regulations are framed with a view to the injury and suppression of such a "trade, or that they, for a moment, consider the moral habits and welfare of the "people when weighed in the scale with their own interest and advantage. Restraints "imposed upon foreign trade are seldom with a view to the promotion of good order, "but almost invariably from a desire to swell the profits and exactions of the officers "of Government; and they are well aware that the more severe and vexatious such "impositions are, the more likely they are to be evaded, thus affording them additional "opportunity of levying fines upon the merchants or others, who may be considered "responsible for the transgression. We cannot, therefore, but consider that under a "Government constituted as this is, for ever professing the most unbounded principles "of benevolence and justice, which only serve to form a contrast to the glaring "corruption of its administration, were any undue control to be afforded it over "British property, the most dangerous results must be expected, and that, if the right "of search were once conceded, such concession could not fail to be attended with "permanent and irretrievable injury to the general commerce carried on with "this country."

The letter shows also that up to this time the Chinese authorities had made no attempt to enforce against foreigners the penal provisions of their regulations prohibiting the import of opium. "By the Chinese law," wrote the Committee, "a native vessel is "at all times liable to be searched; and, if convicted of being engaged in a smuggling "transaction, is condemned to be burnt. Were foreign ships then to come under the "operation of the same law, it would be impossible to say with any degree of certainty "that they might not be subjected to the same penalty." The Chinese, for some reason, were unwilling to legislate for foreigners, or to exercise jurisdiction over them in any matter, except* in cases of homicide; but the immunity, which the foreigners

* An Imperial edict issued in 1808, in regard to the trial of the seaman Edward Sheen laid this down very clearly. "In all cases of offences," it was said, "by contrivance, design, or in affrays happening between "foreigners and natives, whereby such foreigners are liable, according to law, to suffer death by being strangled

enjoyed from the operation of the law against opium, may have been partly due to a conviction, on the part of the Government, of the serious difficulties which any attempt to enforce the law against them would be likely to create.

Auber's China.

In June 1820, two of the Company's supra-cargoes were assaulted by some Chinese at Macao, and one of them was severely wounded. The Macao magistrate, however, granted immediate redress. The offenders were arrested and beaten, and compelled to wear the cangue or wooden collar for a month; and the Committee accepted the measures taken as sufficient.

Letters from the Canton Committee to the Court of Directors, dated 7th and 29th Dec. 1820, in Appendix II. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

On 27th November of the same year, however, a case of homicide occurred, which at one time threatened serious embarrassment to the Company' trade.

A watering party from the Company's ship "London," was assailed by the Chinese at Whampoa, apparently without provocation, with stones, and abusive language. Mr. Pigott, the fifth officer, who was in command of the party, fired from the boat a musket loaded at first with peas, and afterwards with ball. Three boys were slightly wounded by the first shot, and a man was killed by the second. The shots were apparently fired at random, and though Mr. Pigott's conduct was reprehensible, it does not appear that he intended to do more than frighten their assailants. The Chinese lodged a complaint with the authorities; and the Select Committee, recognising the difficulties of the position, attempted to effect an amicable adjustment of the case. "The delay," they wrote to the Court of Directors, "that "thus occurred before we were made acquainted with the circumstance, and the "advanced progress the affair had arrived at in the knowledge of the officers of "Government, rendered it difficult, if not impossible, to silence its further progress "by pecuniary bribes, but we lost no time in trying their efficacy, and succeeded so "far with the family of the deceased Chinese in quieting the expression of their "feelings and neutralising their evidence, as to make it appear this unfortunate "occurrence was wholly accidental."

The authorities, however, acted with energy. An inquest was held on the 1st December, and on the 2nd December an edict was issued by the Governor directing that measures should instantly be taken for the investigation of the case, and for the apprehension of the offender by the English chief. Another edict followed almost immediately, referring to the wounding of the boys, and informing the "English chief" that the "London" would not be allowed to unload her cargo, until the offending persons were delivered over for trial and judgment. Mr. Pigott absconded, and while the Committee were anxiously considering what reply should be given, an incident occurred which brought the proceedings to an unexpected conclusion. The story had better be told in the Committee's own words:—"An "express reached Canton late on the night of the 3rd instant, informing the "President that on that day, shortly after an officer and party were on board the "'Duke of York' charged with our orders to search after and detain Mr. Pigott, the "butcher of that ship had suddenly cut his throat with a razor, and instantly expired. "The first idea that suggested itself to the officers at Whampoa was to carry the "corpse of the unfortunate man to the "London" and affirm that it was the remains "of the fifth officer of that ship. It was finally, however, arranged that no measure "should be taken without our previous knowledge."

"We determined upon ordering that the body should not be removed from the "'Duke of York;' for great as the temptation was to avail ourselves of this most "singular and remarkable coincidence to delude the Chinese Government with the idea "that the person, who had thus committed suicide, was actually one of the persons in "the 'London's' boat on the 27th ultimo, and that he had been induced to commit "violence upon himself from the dread of his impending fate and a sense of deep "remorse at the unfortunate events of that day, we did not conceive it would be "consistent either with our own feelings, or the character necessary to be maintained "by the representatives of the British Nation in this country, to affirm in writing a "statement not founded in truth.

"As, however, the Chinese Government might choose to avail themselves of such a "subterfuge (and we were informed the Viceroy would gladly embrace it), we con-

"or beheaded, the magistrate of the district shall receive proofs . . . . and report the result to the "Viceroy and Sub-Viceroy, who are thereupon strictly to repeat and revise the investigation. If the deter-"mination of the inferior courts, upon the alleged facts, and upon the application of the laws, is found to have "been just and accurate, the magistrate of the district shall lastly receive orders to proceed, in conjunction "with the chief of the nation, to take the offender to execution, according to his sentence.

"In all other instances of offences committed under what the laws declare to be palliating circumstances, and "which are, therefore, not capitally punishable, the offender shall be sent away to be punished by his country-"men in his own country."—Staunton's Notices relating to China.

"sidered it our duty, under the embarrassments we might otherwise be placed in, to "facilitate rather than impede an inference to be drawn from the above circumstances, "which might enable them to satisfy the forms of justice.

"We, accordingly, on the 4th instant, addressed a short note to the merchants, the "substance of which, at their request, on the following date we embodied in an address "to the Viceroy, copy of which we have the honour to enclose, and which we trust will "meet with the approbation of your honourable Committee. The result of the letter "we thus addressed to his Excellency, was an order from him to the Quang-chow-foo "(City Governor) and two mandarins of rank to proceed with the merchants to Whampoa "to investigate the causes which led to the suicide of the butcher, and to investigate the "boat's crew of the 'London.' On the 6th instant the above-named officers of "Government proceeded on board the 'Duke of York' on duty, and having examined "the corpse of the butcher, and satisfied themselves that he had put a period to his "existence, they summoned the six seamen who were in the 'London's' boat on the "27th ultimo before them, for the purpose of obtaining their evidence as to the facts of "the occurrences of that day. This evidence, with a statement of all that took place on "board the 'Duke of York,' before the mandarins, is fully detailed in our records "which will be forwarded. . . . . .

"Referring your honourable Committee to these records, we shall refrain in the "present dispatch from entering more fully into the evidence, further than to state "that, as expected, it was entirely fabricated for the occasion, and having been "corroborated by the six seamen, and the friends of the deceased Chinese having "satisfied the forms of justice, the mandarins left the ship.

"Thus has the honourable Company's trade been relieved from serious embarass-"ments. Although we cannot, strictly speaking, justify the means adopted to bring "about this favourable issue, we trust with the knowledge we possessed of the Chinese "officers of Government being willing to lend themselves to the deception, that we "shall not incur the disapprobation of your honourable Committee for countenancing "an expedient, which has thus speedily brought about a termination of the difficulties "which threatened the honourable Company's interests in this port."

Auber's China.

The conduct of the Select Committee cannot be defended, and the report of their proceedings was received by the Directors with qualified satisfaction. The result of the settlement arrived at was admitted to be advantageous, but the complicity of the Select Committee in the subterfuge was condemned; and the "advantages which must "invariably be derived from a strict and invariable adherence to the truth, as the "foundation of all moral obligations, were declared to be paramount." It is clear, however, that the Chinese authorities were glad of the excuse to pretend that the law had been complied with, and to thereby evade the necessity for measures which would have caused them much trouble and loss. A military graduate and others who attempted, after the conclusion of the proceedings, to induce the father of the deceased to declare himself dissatisfied with the result, were ordered to be prosecuted with rigour as exciters to litigation.

Remarks on a recent dispute between the Americans and the Chinese, by Sir G. Staunton. (Notices relating to China.) China, by Sir J. Davis. The Middle Kingdom, by Williams.

The case also of Francis Terranova, a Sicilian sailor, which occurred in the following year, shows what would have been Mr. Pigott's fate if he had been surrendered to the Chinese. Terranova, who was employed on an American ship at Canton, caused the death of a native woman. His surrender was demanded, and was at first refused by the American Consul. The American trade was stopped; and the Chinese security merchant was arrested and confined. Negotiations followed; and the Americans agreed to an inquiry on the ship by a Chinese officer. At the inquiry Terranova was found guilty, and eventually the Americans yielded and surrendered him, the Chinese giving an assurance that his life was in no danger.

He was, however, tried, found guilty, and strangled the next day; his offence, according to the judgment of the Chinese Provincial Judge, being that he had, in the course of an altercation with a woman selling fruit, thrown an earthen jar at her, which struck her on the head and caused her to fall out of the boat into the water, where she was drowned. No foreigner was allowed to be present at the trial, but Terranova appears to have denied that he threw the jar at the woman; and it seems certain from the facts, as stated by the Chinese judge, that he had not the least intention of causing the woman's death. The Chinese law, however, required a life for a life; and submission to such a law, apart from the extreme danger which existed of injustice in its execution, was naturally felt to be intolerable.

An edict, issued by the Governor on 28th October 1821, after the execution of Terranova, declared that as the American chief had on the whole behaved respectfully

and submissively, it was "proper to permit the trade to be again opened, and cargo to "be taken up and down, in order to manifest our compassion."

The American Government took no notice of this affair, and made no protest against its injustice.

Letters regarding the stoppage of the Company's trade, in consequence of some Chinese being killed by seamen of H.M.S. "Topaze," 1822–7 in Appendix H. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831; and edict by the Governor of Canton to the Hong merchants dated 10th March 1822, in manuscript China Records at the India Office.

The measures taken by the Select Committee in Mr. Pigott's case show clearly how desirous they were to conform to the pacific policy enjoined upon them by the Court of Directors in 1817–18, and to avoid as far as possible any cause of offence, that might lead to the interruption of the trade.

Shortly after the execution of Terranova, however, they were involved in a serious dispute with the Chinese in regard to an affray, which occurred at Lintin in December 1821, between some sailors belonging to His Majesty's ship "Topaze" and a party of Chinese. The Chinese on this occasion appear to have assaulted a watering party, without any provocation other than that afforded by the destruction, by order of the officer in command, of liquor which had been buried in the sand for the seamen's consumption. The attack was made in force; and the first lieutenant of the "Topaze" was obliged to open fire from the ship, and land an armed party to assist the men on shore. A collision took place and two Chinese were killed and several wounded; and 14 seamen also were badly hurt. According to the Chinese account of the occurrence, "the foreigners went clandestinely to Lintin Hill, where they took water and "plucked and ate the foreign potatoes, and wrangled and fought with the natives."

Captain Richardson, who was in command of the "Topaze," submitted a report of the occurrence to the Governor of Canton, and called upon him to punish the offenders. The Governor, however, declined to communicate with him except through the medium of the Hong merchants and the Select Committee; and Captain Richardson refused to accede to a suggestion made by the Hong merchants to the effect that the wounded men should be sent on shore for examination. The Chinese at Lintin also lodged complaints; and the Governor, hearing that two Chinese had been killed, immediately suspended the Company's trade, and required the surrender of the guilty persons. The Committee represented that it was impossible for them to control the King's ships, which were entirely independent of their authority; but the Governor insisted on holding them responsible, and declined to recognise, or correspond with, Captain Richardson. Threats even were issued that the members of the Select Committee would be held personally responsible, if the guilty persons were not surrendered.

The Committee were compelled by these threats to take measures for their own safety; and on the 11th January 1822, they embarked with the other servants of the Company, the treasure and all the property of the factory, in the Company's ships and proceeded down the river to Whampoa. This measure had the effect of convincing the Governor that the Committee were powerless to coerce Captain Richardson; the threat of holding them personally responsible was withdrawn, and the Hong merchants were sent to Whampoa to induce them to return to Canton. A continued suspension of trade was, however, threatened, unless the men were surrendered. An assurance, given by the Captain, at the Committee's request, to the effect that he would, on arrival in England, report the circumstances of the case to his Sovereign for investigation according to law, was then communicated by the Committee to the Governor through the Hong merchants, but the Governor reiterated his demands for surrender of the murderers; and the Committee, despairing of any settlement of the difficulty, proceeded down the river, with the Company's ships, to Chuenpee beyond the Bocca Tigris.

The Hong merchants then suggested that a story should be invented that two men had absconded from the "Topaze," in order that the authorities might have an opportunity of adjusting the dispute by pretending that the murderers had fled; but this suggestion was at once negatived as impossible. Eventually a letter from Captain Richardson, setting forth the facts of the case, was carried by the Hong merchants to the Governor, and he yielded so far as to depute a mandarin, with the Hong merchants, to make an inquiry on board the frigate. The inquiry was made, and the "Topaze" shortly afterwards left China.

On the departure of the frigate, the Committee made further overtures, and the Hong merchants were sent again to Chuenpee; and eventually on the 22nd February 1822, the Governor, on receiving a letter from the Committee, in which they promised that the matter should be brought to the notice of the Directors, and quoted Captain Richardson's assurance that he would represent the affair to His Majesty's Government for investigation in accordance with the law of England, reopened the trade and invited the Committee to return to Canton. This invitation they at once accepted, and trade was resumed.

In a subsequent edict, however, the Governor again attempted to fasten on the Select Committee the responsibility for compliance with the demand made for the surrender of the so-called murderers.

"Now, since the said chief and the others," he wrote, "are persons for the manage-
"ment of the affairs of the said nation, and since it is authenticated that they repre-
"sented to Government that they would state the affair to their Company's Court, and
"through it lay before the said nation's King to examine into it and have the murderous
"foreigners delivered up and prosecuted, it is incumbent on me still to order the chief
"and others to make haste, and direct the delivering up." The Committee were accordingly ordered to tell their nation's King to find out the foreign murderers, and send them in custody to Canton for trial. As regards the "Topaze," the landing of the watering party was declared to be a violation of the regulations, as the victualling and watering of such ships should be done by compradores; and the Committee were directed further to inform the King that as there were no pirates now in the China seas, there was no necessity to send ships of war to convoy the merchant ships, but that if such ships were sent, the officers must obey in all respects the laws of China, and the Factory Chief must be made responsible for their control and management.

This edict was considered by the Committee so objectionable, both in tone and substance, that they declined to receive it.

An edict by the Emperor on the case was communicated on the 5th May 1822. China Consultations dated 6th May 1822, in manuscript, China Records at the India Office.
"It is," it was said, "the fixed law of the Celestial Empire, that in fighting with each
"other, whoever kills a man shall be sentenced to forfeit his life, without at all
"regarding whether he moved his hand first or last. Since the foreign soldiers
"committed a crime in the country, it is right that they should be prosecuted
"according to the law of the country. The Governor was accordingly directed to
"order the chief to tell the King of that country to investigate the affair, and find out
"the foreign murderers, and put them on board a merchantman, and send them
"under a guard to Canton, and by name deliver them up, and await their prosecution."
Orders also were issued, in the sense of those already given by the Governor, as to the victualling and watering of ships of war, and their subordination, while in China, to the "control, restraint, and management of the Chief of the Factory."

On the receipt of this edict the Select Committee addressed the Deputy Governor (in the absence of the Governor) on the 9th June, protesting against the equity of the Chinese law on the subject of homicide. The Deputy Governor, in reply, merely referred them to the Emperor's orders, and insisted on the necessity for implicit obedience. Some months were then allowed to pass; but in March 1823 a petition from Lintin having been sent to Pekin, the Governor reopened the question, and informed the Select Committee that he was looking out for the return of the persons responsible for causing the death of the two Chinese.

Later in the year a suspension of trade was again ordered, owing to the failure of the Committee to surrender the persons demanded; and though the embargo was withdrawn on the arrival of the Company's fleet in the season of 1822–23, the demand for surrender of the offenders was maintained. Explanations to the effect that the "Topaze" had not arrived in England, and that investigation had consequently been delayed, were met with threats of punishment to the Hong merchants, and the Committee were once more compelled to retaliate, and to suspend in their turn all commercial intercourse. The Company's ships were detained at Lintin; and a resolution was arrived at to prevent all British ships from entering the river. The opposition was successful. The Chinese gave way, and in November 1823 an edict was published by the Superintendent of Customs, disavowing any intention to interfere with the ships, and inviting the Committee to resume trade. The ships were accordingly brought to Whampoa, and the business of the season was commenced.

The first lieutenant of the "Topaze" was tried by court-martial in England and was honourably acquitted; and a letter announcing the result of the proceedings, expressing the regret of His Majesty the King for the occurrence, and explaining the inability of the Select Committee to interfere, was written by the President of the Board of Control to the Governor of Canton, on 6th April 1824, and was forwarded to the Committee at Canton for delivery, if they should think proper.

The Lords of the Admiralty also, on the representation of the Court of Directors, issued orders to the Naval Commander-in-Chief in India "that in future, during peace,
"none of His Majesty's vessels of war should visit any port of China unless on a
"requisition from the Governor-General of India, or from the Select Committee of
"supra-cargoes at Canton"; and the Court of Directors at the same time instructed the Committee "that nothing but an occurrence of vital importance and of the most
"urgent necessity" should in future induce them "to forward any representations to the

Letter from the Court of Directors to the Canton Committee dated 7th January 1824, and Letter from the Committee dated 7th January 1824, presented to Parliament in the Session of 1831–32; and Auber's China

" Governor of Bengal or to the Naval Commander-in-Chief in India, for the despatch " of any of His Majesty's ships to China during a period of peace."

The Select Committee, believing that the discussion had been finally closed, and being unwilling to revive it, did not deliver the letter from the President of the Board of Control; but two years later, on the arrival of a new Governor, the question was re-opened by the Chinese, and the Committee then communicated the purport of the letter to the Hong merchants. The merchants privately communicated the facts of the case to the Governor, and as the relations in 1826–27 between the authorities and the supra-cargoes were more than usually amicable, the matter was allowed to drop. In the words of the Select Committee the case was " a strong instance of the " Government . . . . . having been induced to relinquish those proud " pretensions to unconditional submission which it had previously so imperiously " assumed."

Letter from the Canton Committee to the Court of Directors, dated 21st Nov. 1821, in App. II to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831; and evidence of Capt. John Shepherd before the Select Committee of the House of Commons on the affairs of the East Indian Company in 1832.

In 1821 the Chinese made a more determined attempt, than they had hitherto done, to check the importation of opium. The senior Hong merchant was deprived of his button for real or supposed complicity in the trade, and the merchants were threatened with the severest punishment in the event of their failure to assist in its suppression. The Select Committee were appealed to by the merchants to induce the traders to remove the opium ships from the port; and measures were taken against native smugglers at Whampoa and Macao, which had the effect of driving the trade to the island of Lintin, where it was safe from any attack by the Chinese preventive officers, and also, it may be added, from the exactions of the Portuguese. Lintin therefore from this time took the place of Macao as the emporium of the traffic. Orders also were issued by the Governor directing that one half of the goods, lawfully imported in all ships concerned in the traffic, should be confiscated, and that no cargo for the return voyage should be allowed; and the captain and security merchant of every ship, entering the port, were required to execute a bond, declaring that there was no opium on board.

" From all these circumstances," wrote the Committee to the Court of Directors, in November 1821, " your honourable Committee will be able to judge of the deter- " mination of the Local Government to effectually suppress this illicit commerce; and " if they firmly pursue their present system, it cannot continue to be carried on as " hitherto."

China Cons. dated 19th April 1822 in manuscript China Records at the India Office.

The activity displayed may have been due in some measure to the presence of an able and energetic Governor; but an edict* by the Emperor, which was received at Canton some time before the 19th April 1822, shows clearly that the action taken against opium at this time was closely connected with a desire to preserve the circulating medium. The amount of opium reaching China from the independent Native States in Central India was on the increase, and the drain of sycee silver and foreign money, given in payment for the drug, was beginning to be felt.

In this edict,* which is published in full below, the Emperor directed the Governor and the Deputy Governor to strenuously prohibit the exportation of sycee, and to

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* " The Censor, Whawochomoo, has presented a memorial requesting His Majesty to prohibit vigorously the Hong merchants smuggling silver. The following is the Imperial reply :—

" ' What is recommended is extremely right. It is fixed by law that the Hong merchants at Canton, in their commercial intercourse with foreigners, should only receive goods and give goods in return, and not be allowed to employ silver. The law on this subject is very full and explicit. Of late in consequence of the people in this country liking the use of foreign coins, the Hong merchants employ silver to purchase them. This occasions an extremely high price to the tea merchants in their dealings at Chekiang and Fuhkien Provinces, and also their purchasing things with foreign coins which they have bought, a proceeding exceedingly contrary to law, and which it must not be omitted to examine into strictly and prevent. It is hereby ordered that the Governor of Canton, the Deputy Governor, and the Superintendent of the Port (Hoppo) do depute civil and military officers to cruise about and make a true and faithful search of foreign ships leaving the port and not allow them to smuggle any silver. Also every now and then examine whether the deputed officers connive and let silver go, and in case of any being discovered acting so, immediately report their names to me, and punish them.

" ' As to the Hong merchants hooking themselves on to the foreigners, and buying opium of them, it is indeed injurious to the public manners, and it all arises from the Hoppo putting a heavy tax on it and conniving at the illegality, so that it flows into the country in every direction to a great extent. Let the said Governor and Deputy Governor make secret inquiries whether the Hoppo does or does not receive on the " black " tobacco " (opium) a heavy duty, and report to me as the fact may be; and further let a general order be given to all the passes in every province to make a strict and close search for and seizure of this commodity, and from the place where it is discovered let it be immediately ascertained by what road it has travelled, and then let all the civil and military officers at the several passes, who have connived at the opium proceeding onward, have their names reported and be punished. And should the said Governor and the others not make a vigorous scrutiny, or stare about and connive, and not report to me as soon as any case is brought to light, let punishment be immediately inflicted on them. This growing base vice must be put aside to purify the military and Custom House and to benefit the manners of the people.' "

punish all officers convicted of connivance either in the exportation of silver or the importation of opium, and to report whether the Superintendent of Customs was, or was not, in the habit of receiving a heavy duty upon the drug. "This growing base vice," he said, "must be put aside to purify the Military and Custom House, and "to benefit the manners of the people." The purchase of articles with foreign coins, procured in exchange for sycee, was said also to be a "proceeding exceedingly contrary "to law."

Several Chinese officials were involved in the inquiries instituted by the Deputy Governor and the Commissioner of Justice in accordance with the Emperor's orders; and the measures taken were, in the words of the Select Committee, persisted in by the Governor "with such a degree of pertinacity as to occasion the most serious interruption" to the trade. A bond, declaring that there was no opium on board, was required from the commander of one of the Company's ships, arriving at Whampoa in the spring of 1822; and, on his declining to furnish it, the ship and also another of the Company's ships, then in port, were not permitted to discharge their cargoes. Two cases of opium smuggling by men employed on Company's ships had recently been brought to the notice of the Committee, and notwithstanding the orders issued by the Court of Directors in 1818, they shrank from giving the required guarantee; the bond, in the event of opium being discovered, binding the executant to "assent cheerfully to submit to the laws, or, in "other words, consent to confiscation of property and expulsion from the port." They accordingly addressed the Governor and the Superintendent of Customs, and requested that the ships of the Company might be exempted from the operation of the rule, as the Company took no part in the smuggling trade. The request was at first refused; but a second address pointing out the "unreasonableness of persisting in this requi- "sition from the ships of the honourable Company, who during their long intercourse "with China, had never evaded the regular duties of the port, and with respect to opium had not only invariably promulgated the Imperial edicts prohibiting its importation, but also had imposed the strictest penalties on such persons under their "immediate control who might be detected attempting its introduction," was more successful. The Company's ships were exempted from the operation of the rule, and the embargo placed on the unloading of the two ships in port was withdrawn.

Letters from the Canton Committee to the Court of Directors, dated 11th and 19th March 1822, in App. II. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

In April 1823 a ship from India at Whampoa was debarred from trading by order of the Governor, until a British vessel engaged in the opium trade had departed from the coast; and in the season of 1823–24 the Select Committee were informed by the Superintendent of Customs that "the commerce of the honourable Company would be "considered implicated in any accidents, that might arise, in the prosecution of the "traffic in opium on board ships bearing the English flag."

Letters from the Canton Committee to the Court of Directors, dated 27th July 1823 and 6th Feb. 1824, in App. II. as above.

The Committee both in 1823 and 1824 were prepared to require the departure from the coast of British vessels engaged in the opium trade, if the presence of these vessels had led to any interference with the Company's legitimate trade, but it does not appear that they were actually obliged to take this step; and a change of Governors at Canton appears to have led to a relaxation of the efforts made to put the traffic down.

The publication of the Imperial edict of May 1822 regarding the Chinese law on the subject of homicide led to several attempts by Chinese to extort money from foreigners. American and Indian ships and boats were attacked, and compensation was then demanded for wounds received in the affrays thus created. Some of these attempts appear to have been successful, but it is fair to the authorities to say that they made some effort to do justice in the one case that was brought to their notice by the Select Committee.

Letters from the Canton Committee to the Court of Directors, dated 12th and 31st Jan. 1823, and 19th March 1823, in App. II. as above.

In January 1823, a man in the last stage of disease was brought in a boat by two other men to the Company's ship "Balcarras." The men continued alongside in spite of repeated orders to depart; and a small piece of wood was eventually thrown at the boat by a midshipman. The wood struck the cover of the boat; and this, it was pretended, caused the man's death. The man was placed in a boat astern of the ship in a dying state, and a sum of 2,000 dollars, as compensation, was demanded. The fraud was successfully resisted, and a complaint made to the Chinese authorities, who enquired into the circumstances; and eventually, after two years' delay, caused, as was said, by the absence of any provision in the Chinese law to meet the case, slightly punished one of the offenders. As the fraud had been unsuccessful, the crime was not regarded as serious.

The relations between the Company's servants and the Chinese appear to have been fairly satisfactory for some time after the adjustment of the Linin dispute. A cautious policy was in favour. The Committee were submissive, and the authorities

were correspondingly gracious, and as no ships of war visited Canton, there was less opportunity for collision between the Chinese and British seamen.

Letter from the Canton Committee to the Court of Directors, dated 17th Nov. 1825, in App. II. as above; and Auber's China.

In 1825 edicts were published by the Governor of Canton, and the Superintendent of Customs, regarding an attempt made by the Americans to submit a petition in the Chinese language, in which encomiums were passed by the Superintendent on the character and conduct of the East India Company's representatives as compared with other foreigners, and the privilege, which they obtained in 1814, of addressing the officers of the Canton Government in Chinese, was referred to and affirmed; but the representatives of all other nations were required to write addresses in their own languages, and to apply to the Hong merchants to submit them with translations. In the same year also the Governor took some steps to reduce the extortionate charges made for Chinese passage boats between Canton and Macao; and the use of fast boats on the river was permitted.

Letter from the Canton Committee to the Court of Directors dated 8th Dec. 1826 in App. II. As above.

In December 1826, redress was granted in the case of an Englishman, who was severely assaulted by two Chinese in Canton, and the guilty persons were punished. Some spirit shops also in the immediate vicinity of the factory, which were complained of by the Select Committee, were shut up by order of the authorities.

Letter from the Canton Committee to the Court of Directors dated 10th Oct. 1827, in App. II. as above.

In 1827 a new Superintendent of Customs gave umbrage to the Select Committee by insinuations that they were concerned in smuggling, and a suggestion that their privilege of addressing Government in Chinese should be rescinded; but the difficulty was adjusted by the intervention of the senior Hong merchant.

Letters from the Canton Committee to the Court of Directors dated 30th Nov. and 3rd and 12th Dec. 1827, in App. II. as above.

In November of the same year, a Chinese carpenter was accidentally killed by the parting of a hawser on the Company's ship "Golconda." An inquest was held in the ship by a Chinese Magistrate, which established the fact that the death was the result of an accident; and the incident terminated without further trouble. It appears, however, to have been necessary to apply "pecuniary persuasion" to the relatives of the deceased to prevent them from attempting to make capital out of the affair.

China Cons., dated 3rd Sept. 1828, and letter from the Court of Directors to the Canton Committee, dated 13th Jan. 1832 in papers (Colonies) presented to Parliament in the Session of 1831-32.

In the spring of 1828 the Committee were involved in a discussion with the authorities, which led afterwards to serious consequences. A heap of rubbish, thrown into the river after a fire at Canton in 1822, had caused the stream to set towards the opposite bank, and large-sized boats were no longer able to unload at the Company's landing place. In February 1828 the Committee proceeded to improve the landing place, and to enclose and make into a garden the open ground in front of the factory, which was in a dirty and offensive state. No application was made to the authorities for permission to undertake the work, as the Hong merchants stated that no sanction was required. The work, however, when commenced, was at once stopped by the City Magistrate.

Letters from the Canton Committee to the Court of Directors dated 18th Nov. 1828 and 28th Dec. 1830, in App. II. to the Third Report of the Select Committee of the House of Commons, dated 11th Oct. 1831.

In the month of July the Select Committee had occasion to complain of the extortions practised at the Macao Custom House; and in the trading season of 1828–29 the disposition of the Chinese authorities became decidedly less friendly.

On the arrival of the supra-cargoes at Canton, a packet of letters to the Committee's address was seized by a Chinese Magistrate on the person of a ship's compradore; and the Governor, when appealed to, supported the Magistrate, and directed that in future, all letters from the Company's ships should be subject to examination. These orders were pasted up on the walls of the factory, and were not delivered in the usual manner through the Hong merchants; and this was regarded by the Committee as an intentional affront. An edict was also issued about the same time, restricting excursions on the river, a particularly objectionable curtailment of liberties, as foreigners, when at Canton, were nominally at any rate, only permitted to take air and exercise in the alleys adjoining the factories, or upon three days in each month in some gardens on the river, about three miles from the city.

Letter from the Canton Committee to the Court of Directors, dated 18th Nov. 1828, in App. II. as above.

Extract China Cons., dated 3rd and 4th Sept. 14th, 17th, and 22nd Oct., and 21st Nov. 1828, 20th Feb. 11th March, and 7th April 1829, in papers (Colonies) presented to Parliament in 1831-32.

An address was accordingly submitted to the Governor through the Hong merchants on 13th October 1828, protesting against the orders issued on the subject of the Company's correspondence and the excursions of boats on the river, complaining of the Magistrate's interference with the measures taken to clear the ground in front of the factory from nuisances, and to make it into a "wholesome promenade," and suggesting that the publication of offensive proclamations* was ill calculated to conciliate the

* Proclamations were annually issued by the Chinese with the ostensible object of civilising the foreigners, and the language used was often, if not always, of a very offensive character. "They" (the people of Canton), wrote Mr. Lindsay in 1833, "read on the placards stuck up about the streets, by authority of Government, that "we are the most depraved and abandoned of beings, addicted to vices which even they look upon with "disgust; can we be surprised that they believe such to be the fact?" (Report of proceedings on a Voyage to the northern ports of China in the "Lord Amherst," by Mr. Lindsay, in 1833).

feelings of foreigners. The Governor refused to receive this address from the merchants; and it was then carried by a deputation to the city gates and presented there. This produced a reply which, in the opinion of the Committee, conceded the principal points of their representation; and the City Magistrate was deputed to the factory to give directions for the re-commencement of work on the landing place.

The Hong merchants, at the same time, appear to have assured the Committee that the Governor had given orders for the resumption of operations in the square in front of the factory: but an edict, subsequently communicated on the 21st November, merely permitted the Committee "to take the newly accumulated land in front of the factory "within the boundary and build a landing place with wood and stones; but it was not "permitted to usurp, encroach, and build in other places, which would involve exami-"nation and inquiry."

On the 20th February 1829, the Committee applied again to the Governor for permission to enclose the ground in front of the factory, so as to increase the security of the premises and prevent hostile Chinese from insulting the members of the factory. The matter was considered, but the Superintendent of Customs reported that the construction of a wall would obstruct the view from the Custom House, and the application was accordingly rejected by the Governor on the 1st April 1829. An objectionable hole in the ground had been boarded over with planks, and the Governor's order declared that "the planks laid down must be kept as heretofore and the place not filled up with "sand or stones, that encroachment may be completely prevented." The Chinese at the same time were prohibited from landing and making a disturbance at the Company's landing place.

This closed the matter for the season; and up to this point the Select Committee appear to have behaved with moderation under circumstances which were unquestionably aggravating.

The financial condition of the Hong monopolists was at this time very unsatisfactory. One of the merchants failed, in 1828, for more than 1,000,000 dollars, and was banished as a punishment to Tartary: and another, whose outstandings were very large, absconded in 1829, to avoid payment. The number of the merchants also was reduced to seven, and four of the seven were supposed to be in embarrassed circumstances. The Cohong, or close monopoly, therefore, which the Chinese had unsuccessfully tried to introduce in 1813 and the succeeding years, seemed likely to be established by the failure of the indebted merchants: and the Directors and the Select Committee were agreed that such a state of things could not fail to be injurious to their commercial interests. The Directors accordingly instructed the Committee, on 3rd April 1829, to try by every proper and consistent method to obtain an increase to the Hong. The usual arrangement, also, was made for liquidation of the debts of the bankrupt merchant, in annual instalments, by the remaining merchants from the Consoo Fund.

Letter from Mr. Plowden, President of the Canton Committee, to the Chairman of the Court of Directors, dated 28th Jan. 1830 in App. I. to the Third Report of the Select Committee, dated 11th Oct. 1831, and letter from the Canton Committee to the Court of Directors, dated 8th Oct. 1829, in App. IX. to the Report of the Select Committee of the House of Commons on the China Trade dated 8th July 1830.

The condition of the Hong was a genuine grievance; the proceedings of the Chinese authorities in the preceding season had roused a spirit of opposition among the Company's servants, and a policy of conciliation and submission appears to have been in general disfavour among the British subjects then at Canton. Some of the members of the Select Committee were moreover hardly fitted in tact and temper for the difficult position which they occupied.

While at Macao, therefore, the Committee decided that the time had arrived for vigorous measures to secure an increase in the number of Hong merchants, and the removal of some of the more vexatious restrictions on the foreign trade. The Company's ships were accordingly detained on their arrival from England, below the Bocca Tigris, in the hope that the measure would attract the attention of the Local Government to the condition of foreign commerce.

The Governor took no notice of the detention of the ships, and the Committee then submitted an address complaining of the reduction which had taken place in the number of Hong merchants, of the fraudulent flight of one of their number, and of the unfairness of the enter-port charge.

Correspondence followed, in which an assurance was given that the merchant, who had absconded, would be sent for, and that the number of Hong merchants would be increased if men of substance could be found who were willing to engage in the foreign trade, and on the 5th October 1829, the Committee addressed the Governor at length urging that the regulations in force had become "antiquated and decayed," and were unsuitable to the state of the commercial world then existing, and submitting a number of proposals for placing the trade upon a more satisfactory footing. They added that if the old regulations were not immediately altered, foreign ships would be compelled "to seek some other place where for slight cause" they would "not experience extortion and detention."

Some of the proposals submitted, such as the termination of the collective responsibility of the Hong merchants, a relaxation of the orders which prohibited their voluntary retirement, the abolition of the security system and the employment of unlicensed warehouses, involved radical changes in the existing regulations; and, however desirable in themselves, were not likely to be accepted by the Chinese without considerable pressure. The Committee, however, who were really fighting the battle of the whole mercantile community, were cordially supported by the British merchants at Canton, and received also some assurances of support from other European merchants.

Extract China Cons., dated 5th Oct. 1829 in App. IX. to the above Report on the China Trade, dated 8th July 1830.

Letter from Canton Committee to the Court of Directors, dated 8th Oct. 1829, in App. IX. to the Report on China Trade, as above.

Edict of Governor received by Canton Committee on 14th Oct. 1829 in App. IX. to the Report on China Trade, as above.

Letter from Canton Committee to the Court of Directors, dated 23rd Nov. 1829 in App. IX. to the Report on China Trade, as above.

The Governor admitted, in his reply, that the state of the Hong had become "sickened and debased," and directed the merchants to try and induce other men of substance to engage in the trade, promising a remission of all Custom House fees on new appointments; and consulted the Judge and Treasurer as to the possibility of adopting any of the suggestions put forward for improvement of the commercial system. The merchants also visited the Committee, and endeavoured to induce them to send the ships to Whampoa and begin the business of the season, but without success.

At the beginning of November, the Judge and the Treasurer submitted their report. The proposals for radical alterations in the existing system were, as might have been expected, rejected, but the necessity for liquidation of the debts of the Hong merchants and for keeping them solvent in the future was recognised; and it was admitted to be anomalous that the enter-port fee should be the same on all vessels, whether large or small, though the sanction of 100 years of usage attached to the practice. The advisability of applying to the Revenue Board at Pekin and the Emperor for sanction to an alteration in the rate of duty was accordingly recommended.

Edict of the Governor dated 10th Nov. 1829, and address to Governor of Canton Committee, dated 16th Nov. 1829 in App. IX. to the Report on China Trade, as above.

Orders, issued by the Governor in accordance with these recommendations, evoked an indignant protest from the Select Committee. An address of an intemperate character was presented on 16th November, in which the arguments employed by the Judge and the Treasurer were characterised as "futile in the extreme," and intended apparently "for beings of an inferior order"; and the Governor was urged to put them aside and act upon his own judgment. The Company, it was said, was obliged to bear the whole burden of the exactions upon the foreign trade, as other merchants evaded them by smuggling; and the impossibility of carrying on the trade satisfactorily, when only three of the Hong merchants were solvent, was strongly insisted on. "Foreigners," it was urged, "have a right to be treated on a footing of equality with the natives of this "country, and not as dogs or barbarians for whom no consideration is due"; and a scarcely veiled threat, as to the possibility of redress being demanded by the King of England for the ill-treatment of his subjects, was added in conclusion. "We are," wrote the Committee, "the subjects of a King as powerful as the Emperor of China, "of a King who has vast fleets and armies at his disposal, of a King who loves peace "and wishes to be, as heretofore, in amity with the august Emperor of China, but who, "nevertheless, would not see his subjects wronged without seeking to gain redress."

Letter from the Select Committee to the officers of the Company's ships, dated 16th Nov. 1829 in App. IX. to the Report on China Trade, as above.

Letter from Mr. Plowden to the Chairman of the Court of Directors, dated 28th Jan. 1830, in App. I. to the Third Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 11th Oct. 1831.

The commanders and officers of the East India Company's ships were at the same time authorised to dispose of their investments through any channel, or in any manner, they might think proper, without resorting to Canton. This measure, in effect, sanctioned smuggling, and one, at least, of the Company's captains protested and declared that he could not disobey the positive orders of the Court of Directors by embarking in an illicit trade.

The President of the Select Committee, Mr. Plowden, who had been induced to agree to the suspension of the trade somewhat against his own judgment, objected to the tone of this address, and to the permission granted to the officers of the Company's ships to dispose of their investments in an unauthorised manner; but the decision of the majority of the Committee was binding, and he was obliged to yield to his colleagues.

Edict of Governor dated 27th Nov. 1829 in App. IX. to the Report of the Select Committee of the House of Commons on the China Trade, dated 8th July 1830.

The Governor's reply was firm, but moderate in tone. The necessity for a settlement of accounts and for payment of the Hong merchants' debts was admitted, but no hope was held out of any change in the commercial system. "As to commerce," he said, "let the said nation do as it pleases. As to regulations, those that the Celestial Empire "fixes must be obeyed; there is no use in vain multiplication of discussion and "disputation."

Letter from Mr. Plowden to the Chairman of the Court of Directors dated 28th Jan. 1830 in App. I. to the Third Report and Address of Canton Committee to Governor dated 30th Nov. 1829 in App. IX. to the Report on the China Trade, as above.

On receipt of these orders, Mr. Plowden was anxious to end the discussion, but the other members of the Select Committee were unwilling to acknowledge themselves beaten; and another address was presented on the 30th November. The Governor was thanked for his intention to enforce payment of debts, and for his efforts to increase the number of Hong merchants; but his attention was drawn to the fact that, notwithstanding the orders issued, no new men were willing to come forward; and he was requested either to immediately make several new merchants or give permission to the Committee to trade with anyone they pleased.

To this address the Governor returned a more peremptory reply. The immediate payment of all outstanding debts was declared to be impossible; the request for free trade was negatived; the number of Hong merchants admitted to be solvent (viz., three,) was declared to be sufficient; and the Committee were informed that if they presented any more dunning petitions he would "throw them back" unopened.

Edict of the Governor dated 6th Dec. 1829 in App. IX. to the Report on the China Trade, as above.

Notwithstanding the statement in this edict as to the sufficiency of three solvent merchants, the Governor appears to have done his best to increase the number of the Hong, and more than one order was issued by him inviting new men to come forward and enter the business. A rule, which prevented the retirement of solvent merchants, was also somewhat relaxed; and inability to act was, on paper at any rate, admitted to be a sufficient reason for retirement.

Edicts of Governor to the Hong merchants dated 22nd Oct., 16th Nov., and 1st Dec. 1829 in App. IX. to the Report on China Trade, as above.

The majority of the Committee, finding that the Governor was firm, decided to appeal to the Superintendent of Customs, who had recently arrived and taken over charge of his office. An address was presented, appealing to him to attend to their representations and concede their demands; warning him that he would be held personally responsible for the failure of the trade unless means were devised to restore its prosperity; and threatening that if their complaints were treated with indifference, they would lay before the Emperor at Pekin a detail of the causes which had brought destruction to the trade, and ruin to the revenue, first and foremost among which would be placed the extortions and exactions of the officers of the Canton Province.

Address to the Hoppo, dated 25th Dec. 1829 in App. I. to the Third Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

To this address Mr. Plowden formally dissented. "It was," he argued, "natural to "suppose not only that the Government of China, but of any country in the world, "would contend against the imposition of a commercial code by foreigners," and as the Governor had declared his inability to grant the reforms applied for, it was impolitic to continue the discussion. The majority of the Committee, headed by Mr. Baynes, the officer next in seniority to the President, were, however, masters of the situation; and Mr. Plowden's dissent was strongly resented and criticised by his more determined colleagues.

Letter from Mr. Plowden to the Chairman of the Court of Directors, dated 28th Jan. 1830 in App. I. to the Third Report as above.

The Superintendent of Customs rejected promptly the appeal made to him; and Mr. Plowden then proposed to re-open the trade, and send the ships to Canton on his own responsibility. He was, however, overruled by the majority of the Committee, who determined to persevere in their opposition; to appeal to the Emperor of China; to order the Company's ships to remove to Manilla; to interdict the private trade between India and China; and to request the Government of India to send some of His Majesty's ships to Canton.

Reply of the Superintendent of Customs, dated 4th Jan. 1830 in App. I. to the above Report.

After some further acrimonious controversy, in which the majority of the Select Committee were supported by a number of the junior members of the factory, Mr. Plowden, finding his position intolerable, decided on the 18th January to leave China.

Letter from Mr. Plowden to the Chairman of the Court of Directors, dated 28th Jan. 1830 and Extract China Cons. dated 11th Jan. 1830. in App. I. to the Third Report of the Select Committee on the affairs of the East India Company, dated 11th Oct. 1831, and letters from the Canton Committee to the Court of Directors, dated 28th and 31st Jan. 1830, in App. II. to the above Report.

A notice was drawn up by the Committee on the 11th January 1830, for issue to the captains of all merchant vessels, under the British flag, arriving in the Canton river, informing them of the suspension of British trade; and the Governor-General of India was addressed on the same date, and invited to transmit a remonstrance direct to the Emperor of China from India, and to request the Admiral commanding in the Indian seas to send four men-of-war to Canton to repress "the encroaching spirit" of the Chinese authorities, and to give weight to the representations which had been made to them by the Select Committee. Preparations also were made by the Committee to send a statement of their grievances to Pekin by sea; and a petition to the Emperor was presented by a deputation at the gates of Canton on the 18th January, copies of it being enclosed in addresses both to the Governor and to the Superintendent of Customs. The Company's ships, however, were not moved from the coast; and the Indian trade does not appear to have been actually stopped. Both copies of the petition to the Emperor were returned, as the mode of submission was declared to be contrary to Chinese law, which required that foreign nations, which had proposals to make, should send a special envoy, and should not "report abruptly by a side path their affairs in the Imperial presence." The Chinese, however, were evidently anxious to bring the controversy to a close, if this could be effected without any loss of dignity; and the Governor, when returning the petition, on the 20th January, took the opportunity to inform the Select Committee that the Emperor's sanction had been received to an alteration in the enter-port fee, that attempts were still being made to arrest the Hong merchant, who had absconded, and that persons had offered themselves for appointment as Hong merchants. The assurance already given regarding the settlement of the merchants' debts was repeated; and the Committee were advised to reconsider their position, and begin to trade while the season still permitted.

Edicts of the Governor dated 20th and of the Superintendent dated 21st Jan. 1830, in App. I. to the above Report.

Governor's memorial, dated 28th Nov. 1829, and Emperor's edict, embodied in an edict of the Governor and Deputy Governor, dated 26th Jan. 1830. in App. I. to the above Report.

A copy of the Governor's report to Pekin, on the subject of the demand put forward for revision of the trade regulations, dated 28th November 1829, was obtained on the 4th January 1830 by the Select Committee; and the Imperial edict issued in reply was communicated to them by the Governor and Deputy Governor on the 27th January. The Governor, in his report, drew a unfavourable comparison between the English and other foreign merchants visiting the port of Canton. The latter were said to be only "a little perverse," while the English were described as "exceedingly fierce and unruly." The Imperial edict shows that this view was shared by the Central Government at Pekin; the English were said to be "the most domineering and proud" of all the foreigners; and some steps which the Governor had taken to warn the military to quietly prepare for contingencies were highly commended. "If these people," ran the edict, "do indeed become sensible of "their error, repent, and lead the ships into the port, then mutual tranquillity may be "still preserved; but if, because what they desire is not granted, they perversely "make difficulties, it is hereby ordered to disallow forthwith their commencing trade, "and to expel them with severity. If for one or two years we receive less the duties "on this nation's goods, it will be but a trifling injury to the National treasury; and "since the foreign smoke (opium) will not come in, nor Government money go out, "there will really be a great saving."

A change in the enter-port fee was, however, sanctioned in accordance with the Governor's recommendations, and the Governor was ordered to deliberate and report on the subject.

The Company's ships had been detained outside the port for five months; valuable time and money had been wasted; and practically nothing had been gained. The majority of the Committee, therefore, were glad to avail themselves of the opportunity for compromise held out by the Governor's edict of the 20th January. They replied to it accordingly in a more temperate tone; stated that they sincerely wished for the restoration of commerce and expressed their satisfaction at the announcement of the Emperor's orders regarding the enter-port fee, and at the measures taken by the Governor to recall the absconded merchant, and to increase the number of the Hong; but hinted that their means of making a representation to Pekin were by no means exhausted.

Address to the Governor, dated 25th Jan. 1830, in App. I. to the above Report.

Mr. Plowden, though considering that this reply would probably lead to the resumption of commerce, adhered to his determination of leaving China, and sailed for England on 29th January, Mr. Baynes succeeding him as President of the Select Committee.

Edict of the Governor date 2nd Feb. 1830 in App. IX. to the Report of the Select Committee of the House of Commons on the China Trade, dated 8th July 1830.

The Governor met the overtures of the Committee half-way, and issued further orders of a conciliatory nature on the 2nd February 1830. The law in regard to the Hong merchants, who were punished by banishment and confiscation of property for insolvency, was contrasted with the law regulating the dealings of native merchants *inter se*, which provided no penalty for indebtedness; the decision of the Emperor to reduce the enter-port fee in the case of small vessels was again announced; the desirability of increasing the Hong by the addition even of seven or eight new merchants was admitted; one new merchant was said to be ready to act; and the Committee were directly invited to come to terms in the following words:—

"I, the Governor, come to business with impartial feelings, and always measure things "by the great medium. If there really be anything on behalf of foreign merchants "that I can look up and beg His sacred Majesty's favour, I must assuredly deliberate "on the subject, and manage accordingly. Why does not the said Chief and others "carefully consider this and seek for concord."

The season which admitted of the despatch of sailing vessels from Canton to the Straits was nearly over; and the Emperor's order showed that nothing was to be gained by prolonging the suspension of trade. On receiving this edict, therefore, the Select Committee proceeded to Canton from Macao, and ordered the Company's ships to enter the port and discharge their cargoes; consoling themselves with the reflection that, if their expectations of fair treatment were not realised, the arrival of His Majesty's ships, in compliance with the request made to the Governor-General of India on the 11th January, would afford an opportunity for the transmission of a memorial to Pekin at a more favourable season, and in a more impressive manner.

Letter from the Canton Committee to the Court of Directors dated 23rd Feb. 1830 in App. IX. to the above Report.

Letter from the Canton Committee to the Court of Directors, dated 18th Sept. 1830. in App. II. to the Third Report of the Select Committee of the

The measures taken to increase the number of the Hong merchants were continued, and altogether four new merchants were appointed during the remainder of the trading season, and two more in the autumn of 1830. The rule regarding the liability of the Hong merchants, as a body, for debts contracted by any of their number, was also relaxed; and one at least of the new merchants was permitted to trade on his own

responsibility; an innovation, which appears to have been made entirely to meet the wishes of the Committee.

House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

The Court of Directors, on receiving an account of the proceedings of their servants at Canton up to the 29th December 1829, directed the immediate removal from the Committee of Mr. Baynes and the other two gentlemen, who had persisted in measures of opposition, after the failure of the appeal to the Superintendent of Customs, in disregard of the views of the President. The Committee, moreover, were informed that they had identified themselves most unnecessarily with the objects of addresses presented by private traders; that the suspension of the trade was uncalled for; and that the proceedings of the majority of the Committee had been "entirely at "variance with the line of conduct which the Directors had on many occasions "prescribed." To prevent, as far as possible, the occurrence of similar proceedings in future, the President of the Select Committee was invested with power to overrule the rest of his colleagues and to act on his own responsibility in all future discussions with the Chinese Government, if such a measure should be necessary to ensure the continuance of a pacific policy. The orders of the Court of Directors did not, however, reach Canton until the end of November 1830; and in the meantime Mr. Baynes continued to act as President.

Letter from the Court of Directors to the Canton Committee, dated 26th May 1830 in App. IX. to the Report of the Select Committee of the House of Commons on the China Trade, dated 8th July 1830.

The regulations of the Chinese Government prohibited the residence of foreign women at Canton, and the Court of Directors, as recently as 3rd April 1829, had enjoined on their servants the necessity for compliance with the regulations on this subject. The Hong merchants, anxious apparently to conciliate the President, had, while the Select Committee were at Macao, suggested that Mrs. Baynes should accompany her husband to Canton in February 1830; and Mr. Baynes promptly availed himself of the opportunity to effect, what the Committee described, as a "material improvement in the situation of the factory" at Canton. No objection was raised by the authorities in this season; but it is of course possible that they may not have been aware of the lady's arrival.

Letter from the Canton Committee to the Court of Directors, dated 2nd March 1830, in App. IX. to the above Report.

Extract China Cons., dated 27th Feb. 1830 in papers (Colonies) presented to Parliament in the Session of 1831-32.

Another attempt was made, on the arrival of the Committee at Canton, to obtain sanction to the project for levelling and inclosing the ground in front of the Company's factory; but the request was promptly negatived by the Governor, and the "perverse obstinacy" of the foreigners was condemned. The Committee on 27th February 1830, then recorded the following resolution in their proceedings:—"As every attempt "to gain this point has failed by application, we must adopt other means to effect it. "The spot in question presents a serious impediment to the landing of cargo, and is "becoming in itself a disgusting nuisance, as the only piece of ground which we "possess for taking exercise. The absence of any inclosure on the east and south "sides renders the premises public and exposed to the incursions of smugglers "during the night. We, therefore, determine to remove the inconvenience, by "ordering a detachment of boats and seamen from our ships, by whom the cavity "remaining will be filled from a heap of rubbish in the neighbourhood, and a fence "erected to prevent intrusion." The ground was accordingly levelled and fenced by a party of seamen from the Company's ships in spite of the protests of the Hong merchants, who represented that the proceeding would reflect discredit on the Chinese Government. The Kwang Choofoo, or City Governor, visited the spot, immediately after the completion of the work, and directed that the ground which had been levelled should be dug up and reduced to its original state. "This proposition," as the Committee recorded in their consultations, was too "ridiculous to be discussed;" and some of the Hong merchants were said to have admitted privately that the order was a mere matter of form.

Extracts China Cons. dated 4th and 5th March 1830 in papers (Colonies), as above.

The Governor also issued an edict, pointing out that the arrival of the seamen at Canton was a breach of the regulations, and communicating the following orders:—"Hereafter when foreign ships enter the port, the sailors must all dwell on board ship "at Whampoa. It must not be that a number of sailors are ordered up to Canton at "the same time. If the said foreigners presume still to disobey then it will be a "wilful opposition to the orders of Government; in which case I will assuredly "order the forts and the military to fire upon them. Positively I will show no "indulgence. . . . . ."

Edict of the Governor, dated 6th March 1830 in papers (Colonies), as above.

On the departure of the Committee, in April, to Macao, the Hong merchants, in compliance with the orders which had been issued by the City Governor, dug up the earth which had been thrown in to fill up the objectionable hole in the ground in front of the factory, and replaced the boards as before; and there the matter rested until the next trading season.

Extract China Cons., dated 23rd April 1830 in papers (Colonies), as above.

Minute of Lord W. Bentinck, dated 3rd April 1830 in papers (Colonies), as above.

In the same month the Governor-General in India, Lord W. Bentinck, declined to transmit a memorial to the Government at Pekin, and to send ships of war to China, as in his opinion no sufficient grounds had been shown for departure from the cautious and pacific policy, which had been pursued with success up to that time. He was, however, prepared to send Sir C. Metcalfe, one of the members of his Council, to Canton with a letter to the Governor, as a mediator between the Select Committee and the Local Government; but, as the trade was resumed, this project also was abandoned.

Report of the Select Committee of the House of Lords, appointed to inquire into the affairs of the East India Company, and into the trade between Great Britain, the East Indies, and China, ordered by the House of Commons to be printed on the 8th July 1830.

The exclusive privilege of the China trade possessed by the East India Company, formed the subject of inquiry by Select Committees of the House of Lords and Commons, in 1830. The Committee of the House of Lords inquired into the circumstances of the trade and the possibilities of its continuance and development in the event of the privilege of the East India Company being withdrawn; but they expressed no opinion on the questions involved, and contented themselves with reporting the evidence taken without comment.

First Report of the Select Committee of the House of Commons appointed to inquire into the affairs of the East India Company, and into the trade between Great Britain, the East Indies, and China, dated 8th July 1830.

The Committee of the House of Commons also submitted a Report upon the China trade, in which (to use their own words) they endeavoured "to give a fair and "impartial summary of the evidence," which had been brought before them, and abstained from any expression of their own opinion. "Their observations," they wrote, "your Committee have felt ought not by any inference of their own to convey "opinions which may have been taken up; but in the execution of the important duty "committed to their charge, while from necessity some valuable information may be "left unnoticed, they have studiously endeavoured by classification and arrangement "to bring the most material parts of the evidence into view, and thus to facilitate to "the House the means of acquiring for itself an accurate knowledge of its real "tendency and result."

Some passages in this Report, summarising the evidence regarding the disposition of the Chinese towards the foreign trade, the position of the Company's servants and private traders at Canton, the manner in which the trade was conducted, the profit to the Company, the opium traffic, and the probable consequences of the withdrawal of the Company's monopoly, are printed below. The references to the opium trade in particular are important.

*Disposition of the People of China towards the Trade.*

"The people of China are represented to be intelligent, industrious, and persevering, and although said, in some measure, to be independent of foreign trade, owing to their success in agriculture, and to their extensive inland commerce, yet highly sensible of its value and anxiously disposed to cultivate it. . . . . One witness has certainly said that the Chinese are anti-commercial; but this term has been explained to apply, not so much to the disposition of the people, as to that of the Government, whose policy, as it is stated, is adverse to foreign trade and to all foreigners, even though they are aware of the advantages derived from that intercourse. Towards the English, it is by some apprehended that there exists peculiar jealousy and distrust, arising from a knowledge of their territorial acquisitions and military achievements in India, especially those in Nepal and Ava.

"The Government of China derives from the foreign trade a revenue estimated at the most at 650,000*l.* per annum, besides the advantage resulting from the patronage of Canton, said to be the most valuable in the Empire, and to be sold by the Government to the highest bidder."

*Position of Foreigners at Canton.*

"Foreigners are interdicted by Chinese regulations from going within the walls of Canton. The place of their abode is a small suburb, and their residence there is authorised only for the period of the shipping season, but that limitation is not enforced, the Company's servants going when they please to Canton, and some private merchants residing there throughout the year. . . . . ."

*Mode in which Chinese transactions with Foreigners are conducted.*

"The Hong merchants form the body through which the Government of China permits the foreign trade to be carried on, allowing, however, other merchants (designated in the evidence as "outside merchants" and "shopmen") to trade with foreigners; but not in certain articles, such as tea, raw silk, clothes, and woollens, all of which are by the Chinese edicts reserved exclusively to the Hong merchants, they being responsible for the duties of the outside merchants. The Hong merchants are by law mutually responsible for each other to a limited amount, but that regulation does not appear to be always enforced. No one is responsible for the debts of the outside merchants, and traders are warned of this in official notifications. . . . . ."

"The East India Company deal exclusively with the Hong merchants, and are represented to be the only traders who abstain entirely from all illicit dealing. . . . . ."

*Smuggling of Opium and other Articles.*

"Smuggling in various articles is carried on in China to an immense extent, and to the injury of the Hong merchants, who are never concerned in it. It takes place chiefly in the contraband article of opium, which is imported into China in country (*i.e.*, Indian) and American ships, and much of which is purchased at the Company's sales in India. The Chinese Government prohibits the use of opium upon a moral principle; but this prohibition, although frequently reiterated in Imperial proclamations, is not only disregarded by the people,

but also by the Government officers, who appear systematically to connive at the smuggling of opium, and to derive a large profit from the bribes of the smugglers. The Company's servants in India and China, are cognizant of the fact that the opium sold at their sales is conveyed to China; but they are expressly prohibited from having any dealings whatever in that article. . . . . ."

*Influence of the Company's Servants at Canton and possibility of replacing them by an Officer directly appointed by Government.*

"The influence of the Company's servants at Canton is stated to be considerable, and to have increased of late years. They are admitted to personal conferences with the Chinese authorities, who occasionally pay visits of compliment to the factory and to the Company's ships. . . . . The Company's superior influence is ascribed to the magnitude and regularity of their dealings, and to their being able to temporise, without either incurring national dishonour or bringing ruin upon themselves. . . . . ."

"Difference of opinion exists among the witnesses as to whether the same degree of influence as is now possessed by the Company in China could be maintained by a British Consul unconnected with trade. Some assert that the Chinese are not prepared to recognise foreign dignities (in proof of which their refusal to recognise a British Admiral in 1808 has been adduced), and that they respect the Company solely on account of their large commerce; and, on the other hand, it has been asserted as strongly that equal if not superior respect would be paid to a political functionary delegated by the Crown. . . . . ."

*Trade of the East India Company.*

"The main object of the Company's trade with China is the provision of tea for the consumption of the United Kingdom, under the regulations of the Act of the 24th Geo. III. c. 38, usually called the Commutation Act."

"Tea, purchased by the East India Company in conformity with this enactment, used formerly to be paid for principally by bullion exported from England. The Company now provide their funds at Canton by sales of the manufactures* of Great Britain exported by them from hence; and by sales of the produce of India taken from thence to China either by the Company and their officers, or by private traders, who readily exchange a portion of the sale proceeds for the Company's bills on India. A very small proportion of funds is raised by bills upon England, which, when drawn, are at the current exchange."

*Trade in Opium.*

"The trade in opium, which is altogether contraband, has been largely extended of late years, and is conducted by private merchants, British and American. The opium is readily disposed of in China; and the returns of merchandise from China to India not being proportioned to the value of the opium, many of the ships go back in ballast, taking their sale proceeds either in bills on India, or in specie, the exportation of which requires a licence from the Chinese authorities. This permission is granted occasionally for dollars, but never for native silver, usually called sycee.

"Both are, however, constantly exported by private traders to India, in spite of the prohibition; and the whole export of silver by different parties has, in some years, considerably overbalanced the importation of dollars. . . . . ."

*American Trade.*

"The aggregate of the American trade with China has increased since 1814; but latterly there has been a falling-off. Their exports consist principally of dollars, which, even since they began to take British manufactures to Canton, have formed two-thirds of the total exported. . . . . The Americans are said to be well treated in China. Their trade is said to be popular there, in consequence of the large importation of dollars."

*Result of the Company's Monopoly of the Supply of Tea.*

"Several statements have been submitted in evidence with a view of showing that the Company's exclusive right to supply tea involves a very heavy tax upon the public. . . . . It has at the same time been admitted that the Company's profit from the trade is very considerable. . . . . It is said that these profits have afforded to the Company the means, not only to pay the dividends upon the East India stock, and the interest of the bond debt, . . . but also of materially aiding the finances of the Indian territory."

*Abolition of the Company's Monopoly.*

"The opening of the trade between Great Britain and China would not, it is thought, cause any alteration in the policy of the Chinese Government towards foreigners, unless the revenue should fall off from an increase of smuggling by free traders, or unless there should be from private disputes more frequent collisions between Europeans and Chinese. In either of these contingencies apprehensions are entertained that the trade might be entirely interdicted. But, on the other hand, it is said that such a fatal result might be averted, either by the sense which the Chinese Government entertains of the value of the trade, or by the influence of the population of Canton and of the tea districts, which are deeply interested in its continuance."

"In order to derive advantage from free trade between Great Britain and China it would be necessary, as some think, that the monopoly of the Hong merchants should cease, and that a commercial treaty, upon mutually liberal principles, should be formed between the two countries. It is, however, apprehended that the Chinese would not be induced to enter into such a treaty by any other than coercive means, and these, it is fancied, might be easily and successfully used.

"Many of the witnesses are strongly impressed with the belief that a very large increase in the consumption of British manufactures would be the consequence of opening the trade. Private merchants, they say, can push a trade much better than a Company; and new wants and desires would be created by the never-ceasing efforts of individual enterprise and speculation. These witnesses refer not only to the fact of the Americans having of late made exports of British manufactures, but they also refer to the result of opening the trade with India, followed as that measure unquestionably was by an immense increase in the exports from this country. In

* The British manufactures exported were said to consist chiefly of cloths and woollens, and the Indian produce to be principally cotton and opium.

opposition to these views, it is said that the small proportion of the American exports of British manufactures, relatively with bullion, coupled with the fact that the officers of the Company's ships, having no freight to pay, have not increased their exports, ought to be considered as proof that the consumption has not as yet been found susceptible to any material augmentation.

"It is further stated that a formidable obstacle to the growth of a profitable export trade from Great Britain to China arises from the obligation under which India is placed of annually effecting a large remittance to England, and which remittance is now advantageously made by the Company through the medium of Chinese produce. It is likewise observed that the extended use of British manufactures in India has been promoted by fiscal regulations, which the British Government had the power there to make, but which it could not effect in China."

Memorial of the Company's supra-cargoes to the Governor, dated 19th Oct. 1830 in Extract China Cons., of that date, in papers (Colonies), as above

The trading season of 1830–31 was a stormy one. A proclamation, apparently of a more than ordinarily offensive character, was issued by the Chinese in September, in which the English were accused, among other things, of being addicted to unnatural offences; and the Hong merchants were directed to "continually teach the foreigners, "repress their pride and profligacy, and insist on their turning with all their hearts "towards civilisation." Two or three only of the Hong merchants were able to read and write, and the proclamation, in the existing temper of the English community, appears to have caused considerable indignation.

Papers relating to the death of Mr. Mackenzie at Canton dated 4th to 23rd Oct. 1830, in App. II. to the Third Report of the Select Committee of the House of Commons on the affairs of the East India Company, dated 11th Oct. 1831.

On the 30th of the same month, a few days before the arrival of the Select Committee at Canton, the captain of a Dutch ship, Mackenzie by name, was beaten to death by some Parsees. A jury of inquest, convened by the Dutch Consul, found that his death was caused by wounds inflicted "in an affray"; and the Parsees, who had been arrested, were released by Mr. Lindsay, one of the Company's servants, acting on behalf of the Committee. The Governor, however, issued an edict directing that the men should be kept in confinement pending his decision, and on the 4th October 1830, the men were accordingly again arrested. At this juncture Mr. Baynes and the other members of the Committee arrived, and the Parsees were at once made over to the commanding officer of one of the Company's ships. The finding of the jury of inquest appeared to acquit the Parsees of any intention of committing murder; and the Committee were of opinion that further examination of the witnesses was undesirable, and that, whether the case was one of manslaughter or murder, there could be no difference of opinion as to the extreme impolicy of allowing the Chinese Government to interfere where their own countrymen were not concerned. The Parsees were accordingly sent off to Bombay, with a letter addressed to the Governor of Bombay, dated 11th October, setting forth the circumstances, and stating that the Committee were satisfied as to the impossibility of surrendering them for trial in accordance with the "sanguinary law" of the Chinese Empire. On the 13th October an order from the City Magistrate was received by the Select Committee, requiring them to surrender the Parsees; and the Dutch Consul was also ordered to make over Mackenzie's body, (which had been buried some days before,) for examination. To this demand the Committee replied, on the 16th October, that the Parsees had been sent to Bombay for trial.

The Chinese persisted for some days in their demand for the extradition of the offenders, citing the case of the Frenchman surrendered and strangled in 1780, for killing an Italian in self-defence, and another similar case said to have occurred in 1760, as precedents justifying their claim to exercise jurisdiction. The Select Committee were ordered to send a ship to bring the Parsees back to Canton; and the Governor, on 20th October, to induce them to consent, went so far as to express verbally through the Hong merchants his readiness to agree to a trial in the English factory, in accordance with English forms, in the presence of Chinese officials. No reply was given to this communication; and in the absence of the Parsees, the Chinese, though evidently incensed at the refusal of the Committee to admit their right of jurisdiction and comply with the demand, considered it advisable to allow the matter to rest.

"China," by Sir John Davis.

The Committee about this time repaired the damage done to the square in front of the factory by the Hong merchants under the orders of the City Governor, but the proceeding was at the time either unnoticed, or ignored, by the authorities.

Edicts of the Governor dated 11th Oct. 1830 in papers (Colonies) presented to Parliament in 1831–32.

Other causes of offence, however, were soon discovered. Mrs. Baynes again accompanied her husband to Canton; and on the 11th October orders were issued by the Governor, directing the Hong merchants to find out who the woman was, who had come from Macao to Canton in defiance of the regulations, and where she was located, and to "command the said Nation's Chief to take immediately the foreign woman and "hasten instantly to drive her away back again to Macao."

A still more aggressive and offensive order was issued by the Governor at the same time regarding the use of sedan chairs. "It appears," he said, "that the

" foreigners of the various nations coming to China to trade have hitherto not been " permitted on the territory of the capital of the province of the Celestial Empire to " go seated in sedan chairs. Now it is substantiated that the attendants of the " principal office of police have stated verbally to me on the 21st of the present moon " that they had seen a Company's foreign writer who has come to Canton from " Macao publicly entering his factory seated in a chair. This really is opposing " the dignity of the regulations." The City Governor was directed to inquire into the matter, and to command "the Hong merchants and linguists to enjoin " the order on the said Nation's Chief, that hereafter the said foreigners going from " their factories to their boats and from their boats to their factories, must all, as of " old, walk on foot; they must not overstep their proper station or rank, and go about " in chairs."

On the 19th October, a memorial was presented at the city gates by a deputation of captains and officers of the Company's ships and gentlemen of the factory, protesting against the orders issued on the subject of sedan chairs and the residence of foreign women at Canton, and against the language of the proclamation issued on the 20th September; and similar petitions were presented at the same time by a party composed of British merchants and officers of ships engaged in the Indian trade. The memorial from the Company's servants was on the whole temperately worded, and was written, as the Committee recorded, "with a most anxious desire to conciliate the " Chinese authorities; and at the same time under a full sense of the indignities which " have lately been offered to us"; but the Governor was informed that, if the officers of the Chinese Government wished to insult and tyrannise over the foreigners, they really did not know where the business would end.

Extract China Cons., dated 19th October 1830, in papers (Colonies), as above.

On the 20th October, Howqua, the senior Hong merchant, communicated verbally the Governor's orders in regard to Mrs. Baynes. " As to women coming to Canton the " old law forbids it. It never can be permitted. The Chief is desired to send away " the lady forthwith. If she cannot move immediately, the merchants are to ascertain " in how many days she will go. If the Chief says he will not remove the foreign " lady in two or three days, if she still be here, soldiers will be sent to the factory " to seize and drive her out. The Chief is to tell the merchants what day she goes."

Extract China Cons., dated 20th October 1830, in papers (Colonies), as above.

The Committee considered that concession on such a point would be "highly " injurious to the interests and honour of the British Nation," of which they were " the representatives," and decided " to resist the menace of violating the precincts of " the factory, hitherto held sacred, to the utmost extremity." Mrs. Baynes accordingly remained at Canton, and a party of seamen with muskets and guns was ordered up from the Company's ships for the defence of the factory.

Extract China Cons., dated 21st Oct. 1830, in papers (Colonies), as above.

On the 21st October the Governor replied to the memorial of the Company's servants, and the petitions presented by the private merchants at the city gates on the 19th. The regulations of the Celestial Empire on the question of the residence of foreign women in Canton were said to be of long standing, dating at least from the 16th year of Kienlung, 1751 A.D.; and the permission accorded to ladies to reside at Macao was described as "an extraordinary manifestation of the graciousness of our sage and benevolent dynasty."

"As to sitting in sedan chairs," wrote the Governor, "originally it is a small " business; but foreigners being in the provincial city have not hitherto been allowed " to ascend chairs. In going out and in from their factories to their boats, or from " their boats to their factories, if it rained, or they were sick and found it impossible " to walk, still it was only proper for them to lean on some support and proceed."

The proclamation complained of was explained to have been issued in accordance with established practice: as since the reign of Kienlung it had been usual to issue annually such proclamations on the arrival of the trading ships, "with the intention " of looking down and compassionating the foreigners, to prevent their being entangled " in the net of the law." Foreigners speaking unintelligible languages were, it was said, incapable of understanding the "proprieties, laws, and prohibitions and orders " of the Celestial Empire," and consequently found it difficult to avoid "pride and profligacy."

In conclusion the Committee were once more ordered to send Mrs. Baynes back to Macao, and to render in all matters implicit obedience to the laws and regulations of the Celestial Empire.

The Superintendent of Customs issued a similar reply. The objection raised to the proclamations, which, as he said, had been annually issued since the 57th year of Kienlung (1792 A.D.), was ascribed to the machinations of some Chinese traitor. The

prohibition of the use of sedan chairs was justified, on the ground that the position of all foreigners in China was merely that of trading merchants, and that they must expect treatment accordingly, and that natives of the country ought not to be menially employed by outside foreigners. "The flowery natives and the barbarian "foreigners," he wrote, "must be distinctly divided; between those inside and those "outside there must be erected a great boundary;" and the Chief and his colleagues were warned not to vainly spend "their angry breath in restive conduct, which might "lead to self-cutting off the road of commerce."

Extract China Cons., dated 28th Oct. 1830, in papers (Colonies) as above.

On the 28th October the Committee submitted addresses to the Governor and to the Superintendent of Customs, controverting the facts as stated in these edicts. As regards the residence of foreign women at Canton their case was a weak one; but they urged that foreign women had originally been permitted to reside there, though the custom had for many years fallen into disuse, and that they had been allowed to reside at Canton in the previous season without hindrance or objection. Upon the question of sedan chairs, they were able to maintain that they had themselves ridden in such chairs for 20 years, and that their predecessors had done so from time immemorial. The impossibility of complying with the orders issued was strongly pressed, and a threat was added that the foreigners, if driven to extremities by "unnecessary insults "and ridiculous prohibitions," would rebel.

Extract China Cons, dated 25th Oct., 1830, in papers (Colonies) as above.

On the 25th October also, the Committee addressed the Governor on the subject of the threatened expulsion by force of Mrs. Baynes, and asked for an assurance that the persons of all British subjects in the factories were secure, and the buildings "inviolate from the intrusion of an armed force."

Edict of the Governor, dated 27th Oct. 1830, in Extract China Cons., dated 28th Oct. 1830, in papers (Colonies) as above.

The reply was conciliatory. The threat of the use of armed force was, the Governor explained, intended to "awaken" the Committee to a sense of their position; and a case, in which he had befriended some shipwrecked seamen, was cited as an instance of his benevolence to foreigners generally. "The Celestial Empire," he wrote, "benevolently cherishes, righteously rectifies, and gloriously magnifies a vast forbear-"ance. How is it possible that for driblets of men in a petty barbarian factory "troops should be moved to exterminate them." He again, however, informed the Committee that they must obey the regulations and send Mrs. Baynes back to Macao and the guns and seamen back to the ships; and threatened to stop the trade in the event of their remaining obstinate and refusing compliance with the orders. Verbal assurances were given to the Committee by the Hong merchants, when delivering this edict, that persons residing in the Company's factories would not be molested. The seamen and guns were accordingly sent back to the ships; Mrs. Baynes returned to Macao; and the Governor was informed that the Committee trusted his future conduct would prove the sincerity of his assurances, and would obviate the necessity of their taking measures for their own protection.

Extract China Cons., dated 29th Oct. 1830, in papers (Colonies) as above.

Extract, China Cons., dated 1st Nov. 1830, in papers (Colonies) as above.

On receiving this communication, the Governor observed that as they were now penitent and had been awakened to solicit protection, he certainly would not "admit "the principle of moving the military to surround and expel them."

Extract China Cons., dated 29th Oct. 1830, in papers (Colonies) as above.

A reply by the Superintendent of Customs to the Committee's address of the 28th October informed them that the circumstances had been reported to the Emperor for orders. "Although," wrote the Superintendent, "he (the Emperor) cherishes tender "thoughts intensely, how can he extend indulgence to violations of the law? The "state of things must provoke his holy anger to inflict severe chastisement, and "possibly to interdict the commerce, not allowing it to come from the South." The position also, as it then presented itself to the Chinese, was stated with much bluntness. "The said Nation's native spirit depends solely on trade for the necessaries requisite "to support life. Woollens, camlets, clocks and watches are things which China does "not find necessary; but tea and silk are articles which the said Nation cannot "possibly do without. It is by no means the case that the former foreign merchants "forced themselves to bear patiently, but the fact is, they clung to the means of "getting a livelihood."

Extract China Cons., dated 16th and 18th Nov. 1829, in App. II. to the Third Report of the Select Committee on the Affairs of the East India Company, dated 11th Oct. 1831.

The tension, that existed at this time, led to one more act of open defiance on the part of the Select Committee. The port clearances of two of the Company's ships were delayed for some days, because the security merchants had not made up their accounts. The Committee, as they recorded, considered it absolutely necessary, at the first despatch of the season, to convince the merchants that their ships would sail as soon as they were ready; as otherwise similar delays would certainly occur on other occasions. They accordingly issued orders to the captains of the ships in question directing them to proceed down the river with the other ships belonging to the

Company, for which port clearances had been issued, and to return any fire that might be opened by the forts. "In case," they said, "you should be fired at by the forts at "the Bocca Tigris, you are in the first instance to return with blank cartridge; but "should your ships be struck and the lives of the crew be endangered, you are "permitted to fire ball."

The ships sailed, and as they were passing the Bocca Tigris, a gun loaded with blank cartridge was fired from the forts at one of them, and the captain returned the fire in kind.

Affairs were in this position when Mr. Marjoribanks, Mr. Davis, and other gentlemen arrived at Canton, in November 1830, to relieve Mr. Baynes and the members of the Select Committee, under the orders issued by the Court of Directors in May 1830. The supersession then ordered would, it was thought, lead to renewed attempts at annoyance on the part of the Chinese, and the new Committee decided to meet any such disposition at the outset with such a degree of temper and firmness as would effectually check it.

Extract China Cons., dated 8th and 11th Dec. 1831, in papers (Colonies) as above.

Their expectations were soon realised. Two other ladies had accompanied their husbands to Canton, and were then in the factories, and the Hong merchants, under the Governor's orders, required the new Committee to order them to return to Macao. A Hong merchant also, who had, three months before, secured a ship consigned to the husband of one of the ladies, was thrown into prison on account of the lady's presence in Canton. The ladies' husbands do not appear to have been connected with the East India Company, and the Committee declined to use their influence to obtain the ladies' removal. On the 14th December, the Hong merchants made another attempt to induce them to move in the matter, but without success.

Letter from the Court of Directors to the Canton Committee, dated 13th Jan. 1832, in papers (Colonies) as above; and "China" by Sir J. Davis.

The Chinese appear to have been strangely in earnest about this apparently trivial question; and the language and epithets used at this time in regard to English ladies are said by Mr. (afterwards Sir John) Davis to have been of a shocking description.

The Governor, on the 11th December, issued an edict declaring that Baynes had "falsely filled the office of Chief," that he was responsible for the acts of "mad rebellion" of which the Committee had been guilty, and that death was not sufficient "to cover his crime," and requiring the new President, under pain of being involved in heavy guilt, to detain him until the Emperor's pleasure should be ascertained. "If, hereafter," he wrote, "we shall receive His Majesty's commands to take Baynes "and punish his crimes, it will then be right that he be delivered over to be punished."

Edict of the Governor, communicated by the Superintendent of Customs on 11th Dec. 1830, in papers (Colonies) as above.

Mr. Marjoribanks and his colleagues submitted a firm but temperate reply. The right of the Governor to interfere with the servants of the Company in China was firmly but respectfully denied; the suspension of commercial intercourse ordered by the late Committee was said to have been caused by the condition of the Hong, which, as the Governor himself admitted, had become "sickened and debased;" Mr. Baynes' succession as President, the visit of his wife to Canton, and the measures taken for the defence of the factory, were explained and justified; and as regards the future, a belief was expressed that in a country "where the relations "existing between husband and wife and parent and child were held in such high "and deserved estimation," it could not be the Governor's wish "to deny to foreign "residents the possession of these advantages on which, according to the maxims "venerated in China, the moral condition and happiness of mankind so much depend."

Extract China Cons., dated 14th Dec. 1830, in papers (Colonies) as above.

The Governor in reply showed a disposition to come to terms. Mr. Baynes' case was disposed of with the remark—"now that Baynes is gone, his offences may all be "left to himself; originally they do not concern the present Chief and his colleagues;" but the rules of the Celestial Empire, on the subject of the admission of foreign women to Canton, were said to be irrevocable, and the Select Committee were called upon to order the return to Macao of the lady or ladies then in the city. "The "Celestial Empire," said the Governor, in conclusion, "decidedly will not treat "harshly persons from remote parts. If they implicitly adhere to old usages and do "not wilfully originate novel notions, no doubt there will be mutual tranquillity. In "order to effect this, I do not fear the toil of reiterating admonitions and cautions on "the said Chief and his colleagues."

Edict of the Governor, dated 23rd Dec. 1830, in papers (Colonies) as above.

In the meantime the Emperor's orders on the report made by the local officers in November 1830, as to the conduct and attitude of the English, were received at Canton, and a copy of the edict was obtained privately by the Select Committee. "According to internal regulations," said the Emperor, "foreign women are not allowed "to go into the provincial city to dwell, and foreign merchants are not allowed to sit "in chairs and enter their factories. Their bringing musketry and cannon is only for "defence against pirates at sea; it is by no means allowed to convey them clandestinely

Extract China Cons., dated 30th Nov. and 29th Dec. 1830, in papers (Colonies) as above.

" into the city. Now that the said foreigners have presumed to disobey old regulations, " King (the Tartar General) and the others must issue strict and explicit orders, and " cause them to obey and keep the old regulations. Hereafter they must not in the " least degree oppose nor wilfully offend against the prohibitions. If still they dare to " persist in opposition, then forthwith adopt measures to expel them and exhibit " primitive correction; there must not be the least approximation or giving in. It is " necessary for the four persons named above (*i.e.*, the Tartar General, the Governor, " the Deputy Governor, and the Superintendent of Customs), to consult and manage " safely. Whilst cherishing tenderness towards outside foreigners still there must be " no loss of the dignity of the arrangements of the Celestial Empire. To do this will " be good management."

Memorial to the Emperor from the Tartar General, the Governor, the Deputy Governor, and the Superintendent of Customs, dated 1st Jan. 1831, in Extract China Cons., dated 4th Jan. 1831, in papers (Colonies) as above.

To this edict the local officers replied that, although the foreigners of the said nation were all "stupidly obstinate, Baynes was perverse and obstinate to an extreme," and that many of the difficulties, which had arisen, were caused by him; but that he and his colleagues had now been superseded by orders from England on account of their behaviour in the previous season. "We find on examination," they continued, " that the foreigners are covetous of profit and very crafty and artful. It is not " Baynes alone who is thus: so that although Baynes is now dismissed, it is difficult " to ensure that in future those foreigners who are put in his stead will not again " madly form crafty plans. We can only immediately thereon examine and issue " strict orders for them to understand, that hereafter it is absolutely necessary that " the English Chief, and all the foreigners of the various nations pay implicit " obedience to the prohibitions of the Celestial Empire, and tranquilly continue the " ordinary course of trade. If any should presume again to oppose, it will be our " duty, in obedience to your Majesty's will, to form some plan for driving them out " and inflicting severe punishment and correction, without in the slightest degree " approximating to or making accommodation with them, in order thereby to make " the dignity of the Empire revered, and to keep in awe the stupid obstinacy of the " barbarians."

Edict of the Governor, dated 12th Jan. 1831, in Extract China Cons., dated 13th Jan. 1831, in Papers (Colonies) as above.

An order also was issued by the Governor on 12th January 1831, recapitulating the substance of the Imperial edict above referred to, and directing the Hong merchants to command the Select Committee to send back to Macao the two ladies still in Canton, and threatening that if they dared to procrastinate and resist, the Emperor's orders would be obeyed and a "rigorous infliction of expulsion and chastisement (would) be manifested." The Committee, however, took no steps to require the withdrawal of the ladies. The trading season was nearly over, and the time for the return of all Europeans to Macao was consequently at hand; and the Committee appear to have doubted the sincerity of the Chinese and to have considered the matter to be one upon which it was unwise to make a complete submission.

Letter from the Court of Directors to the Canton Committee, dated 13th Jan. 1832, in papers (Colonies) as above.

Edict from the Governor of Canton to the Hong merchants, dated 16th Jan. 1831, in App. I. to the Third Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 11th Oct. 1831.

Rumours of the withdrawal of the Company's monopoly of the China trade were by this time in the air, and in January 1831 the Hong merchants presented a memorial to the Governor upon the subject. "At present," they wrote, "the last division of " the said Company's ships is about to leave the port and return home. We prostrate " beg that you will condescend to confer an edict, enjoining the said Nation's Chief, " Marjoribanks, early to send a letter home, to communicate it to the said Nation's " King, that if hereafter the said Nation's Company be dissolved, will there, as hereto- " fore, be appointed a Chief to come to Canton, to have the general management of " the affairs of the said Nation's foreign merchants and ships, which come to Canton. " If no such Chief come to Canton, there will be no concentrated responsibility; and " since, if the said Nation's country (*i.e.*, Indian) ships and foreign merchants come to " Canton to trade, the ships being many and the men not few, in the event of any " silly foolish ignorant opposition to, and violation of, the commands of Government, " after all who will be responsible? The Celestial Empire's laws and regulations are " awfully strict, and will not admit of the least infraction. The said Nation must be " ordered to make previous and safe arrangements; then hereafter public affairs will " have a head to revert to, and responsibility will not fall upon bystanders. Thus, " it may be hoped, the commerce of the foreign merchants may go on tranquilly, and " when the time comes to act, excuses be prevented."

The Governor replied as follows: "This coming before me the Governor, according " to the proof it affords, I have examined and thus decide. The English nation has " heretofore appointed a Chief to come to Canton for the general management of " commercial dealings. If, indeed, after the 13th year the time of the Company " be fulfilled and it be dispersed, the said Nation no doubt ought, as before, to

" appoint a Chief to come to Canton to manage. But what is said in the present " statement about separation or dissolution of the Company is merely report heard " by the said merchants. Whether it be really true or not still remains uncertain. " However that, which is stated, arises from public motives regarding the future, and " it is incumbent to make previous arrangements. As the above-named statement " has been presented, I unite the circumstances and hereby issue an order to the " said Hong merchants, that they may forthwith enjoin my commands on the said " Nation's Chief early to send a letter home, that if indeed after the 13th year of " Taowkwang the Company be dissolved, it will, as heretofore, be incumbent to deliberate " and appoint a Chief who understands the business, to come to Canton, for the " general management of the commercial dealings, by which means affairs may be " prevented from going to confusion and benefits remain to commerce."

Letter dated 24th Jan. in App. I. to the Third Report as above.

The Hong merchants also addressed a letter to the Chairman of the East India Company, expressing a hope that the Company's monopoly of the China trade would be continued, and affairs conducted in conformity with the arrangements then existing.

" If after three years," they wrote, " the term of the honourable Company be completed and it be dispersed, then individuals of your honourable nation will every one produce capital and hire ships to come to Canton to trade. We imagine there will be scores of them. At that time the captains who come will be hired by individuals; not like the honourable Company's captains, all old and experienced gentlemen selected to fill the situation. Besides traders and sailors, not fewer than several thousands, will not be men selected and employed by the Company, but good and bad will be mixed. Moreover, the men of your nation are, many of them, by habit and nature unyielding and vehement. If there be no Company's chiefs nor Company's captains to exercise control over them, there will assuredly be constant disturbances, and it is possible some grand affray may be produced, and at that time there will be no honourable Company to grasp it with a master's hand. Not only will the public affairs be pushed aside and difficult to manage, but it is apprehended that the trade of your honourable nation will be in danger."

The letter is interesting and shows that the Hong merchants had a shrewd perception of the evils that were likely to attend the withdrawal of the Company from the China trade, but their prophecies were as those of Cassandra.

Letters from the Canton Committee to the Court of Directors, dated 28th Jan. and 11th Feb. 1831, in App. II. to the Third Report, as above.

Letter from the Select Committee to the Court of Directors, dated 26th Jan. 1831, in App. I. to the Third Report, as above.

The remainder of the trading season passed without further friction. An address, which was presented to the Governor by the Committee, recommending the creation of more Hong merchants, as a measure mutually advantageous to both nations, was favourably received, the Governor admitting the advisability of increasing the number as much as possible; and, on the conclusion of the season, the Committee returned as usual to Macao, informing the Court of Directors that they saw before them " only " a prospect of uninterrupted tranquillity." A settlement* also was made with the creditors of the absconded merchant, which provided for the payment of all debts outstanding within four years, and a dividend of 23 per cent. was paid in the month of March.

Extracts China Cons., dated 20th May 1831, in papers (Colonies) presented to Parliament in 1831-32.

Letter from the Canton Committee to the Court of Directors, dated 31st May 1831, in papers (Colonies) as above.

The tranquillity, however, was delusive, and, after the departure of the Committee from Canton, the Chinese commenced a series of measures to punish them for the independence, which they and their predecessors had exhibited. The Hong merchants were sentenced to chastisement with the bamboo, subject to the customary privilege of ransom, for their failure to prevent the residence of foreign women at Canton, but escaped punishment in consequence of an issue of a general pardon to all offenders sentenced to this form of punishment throughout the empire. The manager of one of the leading Hong firms, who was on friendly terms with the English, and had had extensive business dealings with the Company, was thrown into prison, for his traitorous connexion with the foreigners, and there died, in consequence, as alleged by the Select Committee, of the privations and treatment to which he was subjected; and a compradore, who had been in the Company's service for 17 years, was dismissed by an order of the Chinese Provincial Judge, and was prohibited from remaining any longer in the factory.

On the 12th May the Deputy Governor, accompanied by the Superintendent of Customs and a number of armed attendants, visited the Company's factory; put the senior linguist into chains; ordered Howqua, the senior Hong merchant, to prison;

* The debts of the two merchants, who failed in 1828-29, were completely liquidated before the expiration of the East India Company's monopoly. ("The Chinese Security Merchants and their Debts," pages 276 to 291 of Correspondence relating to China, presented to Parliament in 1840.)

Extracts from China Cons., dated 14th May 1831, in papers (Colonies) as above.

treated the picture of His Majesty the King with marked indignity, and directed the immediate demolition of the landing-place and of the inclosure and garden, which had been constructed between the factory and the river. The linguist and Howqua were eventually pardoned at the intercession of the Superintendent, after Howqua had been kept for an hour upon his knees, but the demolition of the quay and devastation of the premises in front of the factory were carried out by Chinese workmen in accordance with the Deputy Governor's orders. The landing-place, it will be remembered, was constructed with the sanction of the Governor; but the former Select Committee, in constructing the inclosure and garden in direct defiance of the Governor's orders, and in repairing subsequently the damage done to them under the orders of the City Governor, had undoubtedly provoked some measures of retaliation.

News of these proceedings reached the Select Committee at Macao, and two of the members, Messrs. Daniell and Smith, were sent to Canton to try and protect the Company's property. These gentlemen, on their arrival, found the work of destruction and devastation in active progress, but were unable to prevent or delay the execution of the orders. They contented themselves, therefore, with preparing a remonstrance in writing, addressed to the Deputy Governor, and returned to Macao on the 17th May, making over the remonstrance to the Hong merchants for delivery.

Extract China Cons., dated 20th May 1831, in papers (Colonies) as above.

On the 20th May 1831, a memorial of the Governor, Deputy Governor, and Superintendent of Customs, to the Emperor, proposing the republication of the trade regulations of the Emperor Kienlung, with additions and alterations considered suitable to the requirements of the time, was communicated by order of the Governor, through the Hong merchants, to the Committee for information and compliance.

The amended regulations were designed, as stated in the memorial, to "strengthen the guards" against the barbarians; and some of them were of a highly restrictive and offensive character, more especially as Kienlung's regulations had, admittedly, "gradually been neglected and the execution of them relaxed."

1. The rule prohibiting the permanent residence of foreigners at Canton was republished, though the necessity for a more extended trading season than was contemplated in the days of Kienlung was recognised and admitted.

2. The Hong merchants were once more prohibited from borrowing money from foreigners; and to enforce observance of the rule, foreign merchants were required to submit in future to the Hoppo, on the conclusion of their business for the season, a statement in writing, declaring whether there were any balances due to them from Hong merchants, and claims thus reported were, in the event of the failure of any Hong merchant, to be repaid in instalments. Claims not reported were to be ignored. Hong merchants were required to pay within three months any balance ascertained to be due, but any debt, for which a claim for recovery was not immediately lodged on the expiration of the three months, was to be treated by the Government as irrecoverable.

3. The concession made in 1814, permitting the employment of Chinese as cooks and tea boilers, was ignored, but the original regulation which prohibited the employment of Chinese by foreigners in any capacity but that of linguist or compradore (purveyor), was modified so far as to permit Chinese to work in factories as watchmen, door-keepers, and carriers of goods and water, but not as servants.

4. Ships, arriving at Whampoa, were declared liable to search and examination, and an obsolete rule, which required that they should be placed under the supervision of a military guard, was revived. The regulation also, which confined all foreign trade to the recognised Hong merchants and placed the foreigners under their government and control, was re-enacted, and it was added:—"Hereafter the foreign merchants, "dwelling in the Hong merchants' factories, must not be allowed to presume of their own "accord to go out and in, lest they should trade and carry on clandestine transactions "with traitorous natives. The boats in Canton River, in which they go, must not be "allowed to set sail and go fast, lest they rush against native boats on the river, and "wrangle and quarrel. They must not be allowed to wander about the villages and "market places near Canton, in order that bloody affrays may be prevented."

5. Foreign women were once more prohibited from residing in the factories in Canton, and foreigners from riding in sedan chairs; and Chinese were prohibited from supplying sedan chairs to foreigners or from acting as chairmen for them.

6. The interdict against the introduction by foreigners of muskets and guns into Canton was repeated.

7. The captains of the Company's ships were allowed to go backwards and forwards on the river in sampan boats with flags set, but the privilege was confined to them only. Foreigners were prohibited from travelling, without permits, from Macao to

Whampoa and Canton, and from Canton to Whampoa and Macao; and the necessity for adherence to the orders, requiring cargo vessels to apply for port clearances at the Custom House, was enjoined both upon foreigners and upon the Custom House officials.

8. Rules were promulgated to regulate the submission of petitions. In affairs of importance, on which it was absolutely necessary that the Governor should be addressed, petitions were to be delivered to the senior Hong merchant, or to the security merchant, for presentation. If the senior merchant, or security merchant, should not present the petition, foreigners were permitted to proceed to the city gate, and there present it to the military officer on guard. "If, however," it was said, "the business be of a commonplace nature, and the Hong merchants have not "refused to present it for them, or the topic be one which it was improper "to present, then the foreigner who shall perversely offend and take a number "of people to the city gate to present a petition, that foreign merchant's trade shall "forthwith be stopped one month, and he be disallowed to buy or sell any goods "thereby to chastise his disrespect."

Regulations 3, 4, and 5, if brought into active operation, would have made the position of foreigners at Canton almost intolerable, and Regulation 8 did not permit of the presentation at the city gates of any petition, which had been refused, or rejected, by the Governor or other authorities. The Committee determined therefore to display their resentment at the proceedings of the Deputy Governor, and to oppose to the utmost the introduction of the regulations, and in accordance with this resolution sent Mr. Lindsay to Canton to deliver up the keys of the Company's factory; prepared addresses to the Governor, Deputy Governor, and Superintendent of Customs, complaining of the Deputy Governor's proceedings and stating that, as they had no means of protecting their property, they were compelled to abandon it; published "as repre-"sentatives of the British nation in China" a notice to the British merchants in Canton that they would be compelled to suspend all commercial intercourse between the two countries, on the 1st August, if their grievances were not redressed, and security against the recurrence of similar acts of violence obtained; and applied to the Government of India for the Governor-General's intervention and support.

Extracts from China Cons., dated 23rd, 24th, 26th and 28th May 1831, in papers (Colonies) as above.

Mr. Lindsay, on arrival at Canton, found that the remonstrance to the Deputy Governor, delivered to the Hong merchants by Messrs Daniell and Smith, had not been submitted; and Howqua, the senior merchant, informed him that their lives would be in danger, if they were to present any letter on the subject of the Deputy Governor's proceedings. After ineffectually attempting to induce them to deliver the remonstrance and addresses, which the Select Committee had subsequently prepared, Mr. Lindsay, on the 27th May, personally presented the addresses and handed the keys of the factory to the Quang Heep, or Commandant of Police, while he was engaged in an examination of the ground at the Company's factory. The Commandant, informed him that the Emperor's orders must be obeyed, and that he declined to receive any petitions; and handed the addresses and keys to Howqua, who returned them. A second effort was made to induce him to take the addresses and keys, but he again returned them to Howqua, and Mr. Lindsay was obliged to return to Macao without accomplishing his object.

Extract from China Cons., dated 30th May 1831, in papers (Colonies) as above.

Foiled in their attempt to communicate with the authorities, the Committee took steps to inform the Chinese people of the nature of their grievances and of the position of affairs, and delivered a manifesto in Chinese to the Hong merchants, and affixed copies of it in conspicuous places in Canton, notifying their intention of suspending trade, if their grievances were not redressed. The English, as they said, had only feelings of goodwill to the Chinese people, but they could never submit to oppression.

Letter addressed to Sir Charles Metcalfe, Vice-President in Council, in the absence of the Governor-General in Upper India, dated 26th May 1831, in Extract China Cons., dated 27th May 1831, in papers (Colonies) as above.

In the letter addressed to the Government of India, the seizure and imprisonment of the Hong merchant, the destruction of the landing place and devastation of the grounds in front of the Company's factory, the obnoxious character of the new regulations, the persistent refusal of the Chinese authorities to receive or consider any remonstrance, and the notice given by the Committee to British subjects of their intention to suspend the trade were fully reported, and the Government of India was requested to assist the Committee in the emergency by sending a letter of remonstrance to the Governor of Canton, and to support the letter by sending the Admiral, or one or more of the ships under his command, to China at the commencement of the ensuing season, in view of "possible contingencies, which the continued hostility of the Chinese "Government might create." The propriety also of addressing a letter to the Emperor of China, to be used or not as might be necessary, was suggested for consideration.

The tone of the letter was decidedly bellicose, and the feasibility of coercing the Chinese in the event of hostilities, and of establishing an intercourse infinitely more

favourable than foreigners had up to that time enjoyed, was discussed at some length. The "whole history of our trade with China," they wrote, "exhibits numerous "instances of acts of undue violence meeting respectful treatment in return from the "Government, while persons living in obedience to its laws were suffering from severe "and unmerited oppression."

Letter from the Court of Directors to the Canton Committee, dated 13th Jan. 1832, in papers (Colonies) as above.

The facts, (subsequently described by the Court of Directors as essential), that the President and members of the previous Select Committee had inclosed the ground in front of the factory in defiance of the orders issued, and had subsequently, when threatened, ordered up seamen and guns to defend the factory from attack, were not however, brought to notice.

Extract China Cons., dated 26th and 27th May 1831, in papers (Colonies) as above.

The Government of Bombay, at the same time, was asked to place one of the Company's cruisers, under the orders of the Committee at Canton, for purposes of communication with the Government of India or for general service in China; and a copy of the letter to the Government of India was communicated to Sir Edward Owen, the Naval Commander-in-Chief in India.

Extract China Cons., dated 1st June 1831, in papers (Colonies) as above.

The determination of the Committee to oppose the introduction of the new trade regulations, and to resent the high-handed proceedings of the Deputy Governor, was warmly approved by the private British merchants in Canton, and Messrs. Jardine, Matheson, Innes, and 20 other gentlemen, on May the 30th, adopted resolutions in which they expressed their unequivocal approval of the measures adopted by the Committee; declared that the proceedings of the authorities manifested a deliberate plan to oppress and degrade British subjects; and appealed to their countrymen in Great Britain not to yield to Chinese caprice, and to take decisive steps for the protection of the trade, "it being," as they said, "apparent from the whole history of foreign intercourse "with the Empire, since Captain Weddell, with a single (*sic*) merchant vessel, in the "middle of the 17th century, took possession of the Bocca Tigris fort, until Sir "Murray Maxwell in recent times silenced the same fort by one broadside from the "'Alceste,' that firmness, resistance, and even acts of violence, have always succeeded "in producing a spirit of conciliation, while tame submission has only had the effect "of inducing still further oppression."

Edict of the Governor, dated 22nd May, and received on the 8th June 1831, in Extract China Cons., dated 10th June 1831, in papers (Colonies) as above.

On the 8th June 1831, however, the Governor communicated to the Select Committee an Imperial edict, sanctioning the new trade regulations, and directing the Governor and other officers to enforce strictly "the internal customs, and so eradicate the dis-"turbances of foreign barbarians;" and added orders of his own, warning the foreign merchants that punishment would inevitably follow any further attempts to offer opposition or create disturbance.

Extract China Cons., dated 10th June 1831, and letter from the Canton Committee to the Court of Directors, dated 18th June 1831, in papers (Colonies) as above.

These orders produced a change of attitude on the part of the Committee. The new regulations had received the Emperor's sanction, and any attempt to induce or compel the Local Government to rescind them, was accordingly out of the question; and the tenor of the Imperial edict showed clearly that a repressive policy was in favour at Pekin. They decided, therefore, to postpone any measures for obtaining redress, until they should see the result of their reference to the Government of India; and in pursuance of this decision, they issued a public notice, informing British merchants that the trade would not be suspended on the 1st August, but recommending them, "to exert every means in their power to recover such property belonging to them" as was then "in the possession of natives of the country"; and apprised the Government of India of their intention not to suspend the trade, as a discussion with the Canton Government, unsupported by a demonstration of naval power, would, in their opinion, be unproductive of result. They added, however, an expression of their conviction, that a demand for reparation should be made on the termination of the season, when the property of the Company and of individuals, had been placed beyond the reach of attack.

Letter from the Canton Committee to the Government of India, dated 19th June 1831, in Extract China Cons., of that date in papers (Colonies) as above.

Extract China Cons., dated 18th June 1831, in papers (Colonies) as above.

Mr. Smith, it may be noticed, recorded an opinion to the effect that the proceedings of the Deputy Governor at the factory, and the promulgation of the objectionable trade regulations, were mainly attributable to the action taken by the Court of Directors in removing from their appointments the members of the previous Select Committee. "An impression," as he said, "was thereby made on the mind of the "Local Government that it could with impunity carry its oppressive acts to almost "any extent, whilst, for the sake of the preservation of the trade their successors "would tacitly submit to every insult and indignity."

Extract China Cons., dated 30th June and 2nd July 1831, in papers (Colonies) as above.

On the 30th June, the Hong merchants returned to the Committee, unopened, the remonstrance to the Deputy Governor, dated 17th May, and the subsequent addresses to the Governor, Deputy Governor, and Superintendent of Customs, with the sealed packet containing the keys of the factories, and informed them that they had tried

ineffectually to present the documents addressed to the Deputy-Governor and Superintendent of Customs, and that the Governor, on the 20th June, had verbally issued orders to the effect that the Deputy Governor had "reverently received the great "Emperor's orders to take their landing-place which had been built, and destroy it by "excavation," and that the Chief and others must yield obedience to the Imperial will.

The Committee sent back the Hong merchants' letter, and informed them that they declined to receive any communication from them upon the subject, as the officers of Government had taken no notice of addresses which they had found it necessary to present.

Petitions by the private British merchants to the Deputy Governor and the Superintendent of Customs, protesting strongly against the new trade regulations, and against the attack (so-called) on the property and factories of the East India Company, at Canton, were summarily rejected. The Deputy Governor, in his reply dated 12th July 1831, justified his proceedings at the Company's factory; threatened to take troops and open fire on any barbarians who might in future "audaciously presume to act irregularly," and required the petitioners to implicitly obey the regulations.

Address of the British merchants to the Deputy Governor and Superintendent of Customs, dated 8th July, and replies of the Deputy Governor and Acting Governor, and of the Superintendent of Customs, dated 12th and 13th July 1831, in papers (Colonies) as above.

The Superintendent of Customs was equally firm, though less violent. The petitioners were told that they were merely private merchants, and were "not at all comparable" with the Company, and if they disliked the restrictions imposed upon them by the orders of the Government, they might withdraw their business and not take the trouble to visit China; and the Hong merchants were directed to order the said nation's Chief to "keep Jardine, Innes, and the others under restraint, not allowing them to "create disturbance and again dun with petitions."

The orders, issued with so much determination, merely offered another illustration of the great difference between Chinese precept and practice. The Select Committee reported in September and October 1831, that no attempt had been made to put the more obnoxious provisions of the new regulations in force, and Sir John Davis in his book on China tells us that they were not acted on. The Chinese also appear to have permitted, and even assisted at, the reconstruction of the landing-place in front of the factory.

Letter from the Court of Directors to the Canton Committee, dated 18th April 1832, in papers (Colonies) as above; and "China," by Sir John Davis.

The Governor-General of India, upon a consideration of the facts as stated in the letter dated 26th May 1831, decided to support the Committee. Admiral Sir Edward Owen was instructed to visit China, and a letter of remonstrance from the Governor-General to the Governor of Canton was despatched in H.M.S. "Challenger." Another letter appears to have been addressed by the Governor-General to the Emperor for delivery if the result of the remonstrance to the Governor should prove unsatisfactory, but this letter was not delivered.

The "Challenger" arrived at Canton in November 1831, and after some negotiation the Governor-General's letter was delivered by Captain Freemantle to a deputation of mandarins. The Governor in his reply disavowed any intention of outrage or insult, but the reply, was so unsatisfactory, and was conveyed in so objectionable a manner, that the Committee declined to accept it. Finding that the Governor-General was prepared to support them, the Committee were at first disposed to re-open the whole question, and the President, Mr. Marjoribanks, appears to have had some intention of taking the Governor-General's letter to Pekin himself. The Admiral, however, did not visit China, and the result of the remonstrance to the Governor was not encouraging. The matter, therefore, rested until instructions, received from the Court of Directors, repressed effectually the combative spirit of their servants.

The Chairman and Deputy Chairman of the Court of Directors, on hearing of the measures taken up to the 31st May, to suspend the trade and appeal to the Government of India for armed resistance, wrote at once on 9th December 1831, warning the Committee against the adoption of any course of policy likely to involve the Company "in hostilities against the Chinese, without the most distinct and positive orders" from England; and detailed instructions were subsequently communicated on 13th January 1832, in which the Court reviewed at length the causes of the discussions between the Select Committee and the Government at Canton.

Letter of the Chairman and Deputy Chairman to the Canton Committee, dated 9th Dec. 1831, in papers (Colonies) as above; and Letter from the Court of Directors to the Canton Committee, dated 12th Jan. 1832, in papers (Colonies) as above.

The Directors admitted that the conduct of the Deputy Governor was a sufficient cause for irritation, but pointed out that the previous Committee had given provocation by constructing the inclosure in front of the factory contrary to express orders, and by permitting and encouraging residence of European women in Canton. They disapproved also the support given by Mr. Marjoribanks and his colleagues, to a continued disobedience of the law on the subject of European women; observed

that the trade regulations, though some of them were undoubtedly very objectionable, did not differ materially from others, which had been enacted at former periods; and while declaring themselves fully sensible of the difficulties which the Committee had encountered owing to the supersession of their predecessors, expressed an opinion to the effect that the decision to abandon the factory and suspend trade had been arrived at with undue precipitation. They condemned the requisition made to the Government of India for the aid of ships of war, as being contrary, both to good policy and to the instructions which they had issued on the subject in 1824; and as the Committee had apparently not abandoned the idea of obtaining reparation, they laid down for their guidance explicit instructions in regard to the future conduct of their relations with the Chinese Government.

"The commerce between Great Britain and China," they wrote, "is too important "to be put to hazard without the most urgent and imperious necessity, and on no "account upon considerations of a personal nature. It is of essential moment to the "Indian as well as to the home revenues, both as regards the State and the East India "Company, as well as in the regular supply of the British public of an article of "general consumption.

"We sought that trade originally, the advantages which it has yielded has induced "us to exert every endeavour to secure its continuance. Those exertions have been "attended with success, and although late events have led to the expression of "opinions in favour of a more decided and less pacific course of policy, we are by "no means prepared to adopt or to act upon such opinions.

"To attempt to maintain a purely commercial intercourse, such as that with China, "by force of arms, would in a pecuniary point of view be anything rather than a matter "of profit, even if justice and humanity could allow us for a moment seriously to "contemplate such a step. We cannot in fairness deny to China the right which our "own nation exercises as she sees fit, either by prohibiting, restraining, or subjecting "to certain laws and regulations its commercial dealings with other countries. "China must be considered free in the exercise of her affairs without being accountable "to any other nation, and it must be remembered that she has rejected every effort "made by us, as well as by almost every other European State, to form a com-"mercial intercourse with her upon those principles, which govern commercial "relations with other countries."

They directed the Committee, therefore, to avoid for the future all discussions with the Chinese authorities, except in cases of absolute necessity, and to carry on any discussions in which they might find themselves involved, with temper and moderation, and to bring them to a close as soon as possible. "It is a notion too commonly "entertained and acted on by you," they wrote, "and encouraged by foreign "merchants residing at Canton, that nothing is to be gained from the Chinese by "obedience to their laws and edicts, but that much may be gained by intimidation; "you may have succeeded for the moment in setting the Government at defiance, but "that Government has not only taken the first opportunity to assert its dominion, but "also with the view of making you feel the consequences of disobedience, it has "almost invariably deprived you of some advantages, which it had either tacitly or "avowedly yielded to friendly remonstrances. The proceedings as to Macao in 1809, "and those now under review, fully bear out this observation."

The assumption by the Committee of the character of representatives of the British nation was also strongly objected to.

"It is essential," they said, "that you should clearly understand that you are not "the* representatives of the British Nation, but of the East India Company, in whom "the exclusive trade with China has been vested by Parliament. The assumption of "the character of British representatives has increased the difficulties experienced in "the various discussions which have arisen with the local authorities, more particularly "those in which his Majesty's ships have been concerned. When, on such occasions, "you have disavowed to the Chinese authorities all right of interference with the "captains of ships of war, those authorities have urged the impossibility of your not "having power, as the representatives of the British Nation, over all ships belonging "to your country."

* As representatives of the Company, which represented in China the British nation, the supra-cargoes were in a sense the national representatives, and, as has been shown, the Chinese Government had for half a century utterly refused to recognise any authority at Canton but that of the Select Committee. From the Company's point of view, however, the instructions issued were unquestionably politic and wise.

In conclusion, the orders of the Chairman and Deputy Chairman, forbidding the adoption of any policy likely to involve the Company in hostilities with the Chinese without distinct and positive instructions were once more repeated, and the Committee were informed that "the preservation of the national honour" was "in the hands of "his Majesty's Government, and it must be for the King's Ministers alone to take the "responsibility of deciding upon the adoption of extreme measures for vindicating that "honour, if insulted."

Similar instructions were issued by the Directors in April 1832, when news reached England of the disposition of the Committee to re-open the quarrel in consequence of the assurance of support, which they had received from the Government of India; and the Committee were informed that whatever might be the position held by Great Britain in the scale of nations, the English had no pretensions, greater than those of other nations, to dictate to the Chinese the principles upon which they should carry on foreign trade.

Letter from the Court of Directors to the Canton Committee, dated 18th April 1832, in papers (Colonies) as above.

In 1832–33 various attempts were made to trade at ports and places on the Chinese coast north of Canton. One vessel, the "Lord Amherst," was despatched in February 1832 by the Select Committee, and visited Amoy, Foochowfoo, Ningpo, Shanghai, and other places on the coast. Mr. Lindsay, a member of the factory was chief of the expedition, and was accompanied by the Rev. C. Gutzlaff. The voyagers were received with civility at nearly all the places visited, but the Emperor's orders, confining foreigners to the port of Canton, were found to be an effectual bar to the establishment of a legitimate trade, and although the people of the country were apparently anxious for a more extended intercourse, the expedition, from a commercial standpoint, was a failure. The Court of Directors condemned the enterprise, and requested the Committee to "abstain from the prosecution of any further attempts to extend" their intercourse with the Chinese without their "previous express sanction," and to adhere strictly, in their relations with the authorities at Canton, to the instructions conveyed in their letter of 13th January 1832.

Books on China by Sir John Davis and Mr. Auber, and a Report of proceedings on the voyage of the "Lord Amherst," by Mr. Lindsay.

Other ventures by private traders, particularly that of the "Jamesina," under the orders of Mr. Innes, appear to have been more successful; but opium* was the principal article disposed of, and at Foochowfoo, where Mr. Innes openly applied for permission to trade in woollens, calicoes, and rice, his application was rejected on the ground that the port was closed to foreign trade by the Emperor's orders.

Edicts were issued by the Chinese Government regarding the unauthorised visits of the "Lord Amherst" and other vessels to the north-east coast, and the Provincial Governors were held responsible for preventing any repetition of such enterprises. The Select Committee in reply to an urgent communication from the Governor of Canton, which was supposed to refer to the "Sylph," a private vessel, stated that it was impossible for them to prevent or be answerable for vessels "illegally visiting the northern parts of the Empire," but promised to inform the British Government that foreign vessels were prohibited from trading at any port of China except Canton.

In April 1832 an incident occurred, which illustrated in a remarkable manner the spirit of audacity and contempt for the Chinese, which was growing among the English residents in China at this time. The arrogance of the officials and insolence of the populace provoked indignation; and the weakness and venality of the Government gave some grounds for the belief that more was to be gained from it by violence than by submission and temperate remonstrance.

Mr. James Innes, having occasion to complain to the Superintendent of Customs regarding a private grievance, entered the Superintendent's house and walked into his apartment accompanied by two friends and a Chinese purveyor, with the intention of making a representation. The Superintendent was asleep, and Mr. Innes and his friends were retiring, when a man came forward and struck Mr. Innes three times with a wood chopper, and wounded him on the arm. Mr. Innes withdrew, and went immediately, accompanied by five of his friends, to the house of Howqua, the head Hong merchant, and demanded the arrest and trial of his assailant by Chinese law. Howqua, as was said, trifled; and Mr. Innes took an oath that if the man was not in confinement for trial before sundown (it being then 2 p.m.), he would set fire to the Superintendent's house. The threat was disregarded, and at 8 o'clock, Mr. Innes set fire to the house by means of some rockets and blue lights. At 8.30

* "My mind is made up," wrote Mr. Innes, in regard to this voyage, "that until some important change in "the relation of the two countries takes place the only chance of pushing English manufactures on this coast "is by having them a small item in an opium cargo. At the same time it must be stated that the population "of the country are most anxious to trade if they could escape mandarin vengeance." (Auber's China.)

Howqua appeared, and conceded every point that he had at 2 p.m. evaded; and on the following day the man was (according to Mr. Innes) "exposed all over Canton, wearing "the wooden collar with his offence described upon it."

The merchants appealed to the Select Committee, and they, after hearing Mr. Innes' account of the case, expressed an opinion that he had acted most unjustifiably, but he does not appear to have been called to account in any way for the outrage.*

The power and influence of the Company were by this time on the wane, and the growth of the opium trade and of smuggling generally was responsible for an increase of lawlessness on the part of private traders, and of the seamen engaged in the illicit traffic. The Select Committee, in a letter written to the Court of Directors, in January 1831, reporting on the state of trade and of affairs generally at Canton, gave the following graphic description of the phase upon which the opium trade had then entered. "We have," they wrote, "already acquainted your "honourable court with the greatly increased extent of the opium trade in China, "carried on in defiance of official proclamations, under the connivance and frequently "by the officers of the Government appointed to put it down. The ships engaged in "it now remain anchored at the Island of Lintin and in its neighbourhood, through-"out the year, unmolested by the Chinese war vessels. The traffic is not confined to "opium, but extends to articles of every description. Reports are regularly made by "the native pilots to the Governor of Canton of the number of vessels engaged in it. "It never can be a recognised trade, but, it is now, to all intent and purposes, an "established one, and affords one of the most remarkable instances in this, or perhaps "in any other country, of the weakness and corruption of the Government."

Letter from the Canton Committee to the Court of Directors, dated 26th Jan. 1831, in App. I. to the Third Report of the Select Committee of the House of Commons in the Affairs of the East India Company, dated 11th Oct. 1831.

The demand for opium in China had for some years been increasing, and in 1820–21 Bengal opium realised the enormous price of 4,283 Rs. per chest in Calcutta. The attempts made by the Indian Government in 1821–29, to restrict the production of opium in the States of Central India had failed; the measures had been very unpopular, and had also been ineffectual; and in 1829–30 their failure was acknowledged, and the export from Bombay of opium produced in the Native States was permitted on payment of a pass duty to the British Government. This measure led also to an increase in the quantity of Bengal opium offered for sale. With a free supply of Malwa opium in the market, limited only by the extent of the demand in China, it was impossible to continue the old policy of selling a small quantity of Bengal opium at a high price; and to protect its Bengal revenue Government was obliged to increase the quantity of opium sold.

The traffic was known to be contraband, but the Select Committee of the House of Commons in 1830, in their summary of the evidence taken on the subject of the China trade, had stated that the prohibition of opium, though frequently reiterated in Imperial proclamations, was disregarded by the Chinese people, and by the officers of Government, who appeared to connive systematically at its introduction, and to derive a large profit from the bribes of the smugglers. In 1832, also, the Committee in their final report gave an indirect sanction to the contraband traffic by their recommendation in favour of the maintenance of the revenue derived from the export of opium by the Indian Government. "In the present state," they wrote, "of the revenue of India, it "does not appear advisable to abandon so important a source of revenue; a duty upon "opium being a tax which falls principally upon the foreign consumer, and which "appears upon the whole less liable to objection than any other which could be "substituted."

Report of the Select Committee of the House of Commons, on the Affairs of the East India Company, dated 12th Aug. 1832.

Dealings in the drug, however, up to 1830, were peaceably conducted; but from that time the smugglers became bolder and more aggressive, and disputes and fights with the natives on the coast began to occur. The traffic also was gradually extended from Canton to other places and ports, at which foreign trade was not permitted, and this naturally roused the indignation of the Chinese Government. In March 1831 a serious affray occurred at Lintin in which a Chinese was killed and others were

* In judging the actions of our countrymen at Canton, at this time, it is necessary to make due allowance for the humiliating and exasperating conditions under which they lived and traded. Their trade was confined to the one port; their personal liberty was restricted, and they were constantly exposed to insult and contumely. "Insult," wrote the Rev. W. H. Medhurst, in his book on China in 1838, "is another evil which foreigners "are obliged to endure whilst resident in Canton. In addition to the word 'barbarian,' which is liberally "bestowed on all without the pale of Chinese civilisation, a more offensive epithet is not unfrequently employed. "On passing through the suburbs of Canton, or up and down the river, the cry of 'foreign devil' salutes the "ear on every side; even mothers may be seen teaching their infants to point and shout the offensive epithet "as the stranger passes by. Some will even go out of their way, or desist from their work, to gratify their "railing propensities." ("China: Its State and Prospects, with especial reference to the Spread of the "Gospel," by the Rev. W. H. Medhurst; published in 1838.)

wounded by English and American smugglers. The Chinese on this occasion appear to have been the aggressors in the first instance, but the conduct of the smugglers was criminal and lawless in the extreme. A boat containing clothes belonging to the crews of the smuggling ships, which had been left in charge of some Chinese and lascar sailors, was seized by a mandarin boat with (as was said) the view of extorting money. The cries of the lascars were heard on the ships, and four boats put off to the rescue. The captain of an American ship appears to have been the leader of the party, but three of the boats were from English ships, one of which was sailing under Portuguese colours. Fire was opened on the mandarin boat, and after some time the boat containing the lascars and clothes was relinquished. The fire, however, was continued even after the rescue had been effected, and in the course of the affair one man in the mandarin boat was killed, and five or six others were wounded. The mother of the deceased Chinese applied to the Local Government for redress, asserting that her son had been killed by men belonging to an English ship. The Select Committee were called upon to assist in the discovery of the offender, but no attempt was made to fasten the case upon the English in particular, the Superintendent and City Governor stating in edicts, issued on the subject, that the offence had been committed by some person or persons from the "foreign ships." The Select Committee in reply said that the Company had no ship at Lintin, and that they could not be answerable for foreign ships, and this excuse appears to have been accepted, and the case was not pressed. The Committee did not compel the English ships concerned to leave the coast, as they were afraid that such action would be regarded by the authorities as an admission that the English alone were responsible for the man's death, and that the Company's trade would be placed in danger; and the Chinese officials were either unable or unwilling to proceed themselves against the smugglers, who remained in consequence entirely unmolested at Lintin.

In 1832, however, the increase of smuggling, and the evils arising from it, attracted the attention of the Local Government, and the Governor and Deputy Governor of Canton submitted a memorial * to the Emperor suggesting the advisability of legalising the opium trade and of abandoning the policy of prohibition. "We, your Ministers," they wrote, "after humble consideration, are of opinion that, opium having become "prevalent in the country, vagabonds who smoke it to the injury of their lives and "of their constitutions, do so entirely from their own stupidity and refusal to be "aroused, and are therefore unworthy of regard. But the loss of wealth and the "waste of treasure are exceedingly great, and the evil suffered is not, indeed, light. "If at this time it were suffered to be brought in and publicly used, with legal per-"mission, as a medicine, this would prevent the foreigners from raising the price to "an enormous height. Thus also might a silent impediment be placed in the way of "their avaricious plans and large profits." . . . . . "In Canton Province of "late years," they continued, "the plunderers of trading boats on the coasts and "rivers, and the plunderers of travelling merchants on land, who have, under the "pretence of searching for opium, wantonly troubled others, and involved them in the "prevalent illegality, are more than can be told. And the quantities of opium dirt, "which civil and military officers have at various times been sent to burn and destroy, "are incalculable. Yet, after all, we do not know in what respect the illegality has "been suppressed."

Letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837, pages 153–156 of correspondence relating to China, presented to Parliament in 1840.

The Emperor, however, was not prepared to sanction such a radical change of policy, and the memorialists were formally censured for their proposal.

In or about 1832 the opium ships began to anchor in what the Chinese called the "inner seas," and at Cumsingmoon in 1833 the smugglers came into serious collision with the natives of that part of the coast. On the 12th October a Chinese was arrested by a boat's crew of a Portuguese ship on a charge, apparently well founded, of removing brass and iron from the wreck of an English vessel, which was stranded near the anchorage. Several articles had been previously taken, or (as was said) stolen from the wreck; and the Chinese was accordingly made over to the mate of the "Hercules," and was by him detained until the commander, Captain Grant, who was then at Macao, should return. The Chinese on shore, in the meantime, on the 13th October seized in retaliation a lascar of the "Hercules," who was watching the

Papers regarding hostilities between the Chinese and British subjects engaged in the opium trade from 1830 to 1833 (55 pages), presented to Parliament on the 24th March 1840, pages 5–21.

* Le, who had been Governor of Canton throughout the disputes and discussions of 1829–31, was removed from his appointment in 1832, for his failure to suppress a local insurrection, and was succeeded by Loo, who appears at the commencement of his term of office to have been well disposed towards foreigners, and to have been anxious to maintain friendly relations with them. The memorial referred to was submitted either by Le, or Loo, probably the latter. Captain Elliot, writing in the time of Governor Tang in 1837, says that the memorial was submitted by the late Governor, *i.e.*, Loo.

wreck, and the mate of the vessel landed on the same day with a party of about 40 men; proceeded to the village where the man was detained, and effected a forcible rescue. The Chinese, however, attacked them when they were on their way back to the boats, and in the course of the fight that ensued another lascar was captured, and was either killed on the spot or was subsequently put to death. One of the Chinese also was badly wounded by a charge of small shot, and other persons were hurt on both sides.

The circumstances were reported to Captain Grant at Macao; and in accordance with his instructions an attempt was made on the morning of the 15th to overawe the Chinese, and rescue the lascar, who was then supposed to be alive. An expedition, consisting of 18 boats, manned by about 250 men, all armed, from the ships of five Nations then at the anchorage, 50 of the men being Europeans, started for the village, where the first fight had occurred, to insist on the man's release, and to use, if necessary, force to obtain it. The instructions, however, which they had received from Captain Grant, who, as the senior captain of the ships consigned to Jardine, Matheson and Cc., appears to have been regarded as the Commodore of the smuggling fleet, directed them to take some prisoners and seize two or three boats, if the Chinese would not give the man up, but to be careful not to fire so as to endanger life. The Chinese were prepared, and as soon as the boats approached the shore they opened fire, disregarding a flag of truce. The fire was ill-directed, and no one was hit; but some of the party became exasperated, and fired some shots in return, and another Chinese was wounded. The captain of the expedition seeing that the object in view could not be attained by a demonstration, and that the Chinese were determined to resist, decided to withdraw; and the boats returned to the ships.

Chinese troops were sent to the village, and Captain Grant, who rejoined the "Hercules," after the failure of the expedition, commenced negotiations (in which he was assisted by the Rev. C. Gutzlaff) with the mandarins in command, to try and obtain the release of the lascar, promising that, as soon as he was released, he would deliver up "the thief for punishment." The lascar appears to have been killed before this; and the mandarins professed themselves unable to afford any information.

Pages 10 and 11 of the above Papers.

On the 24th October the Governor took up the case; deputed a magistrate to the village to inquire whether the villagers or the foreigners were to blame in the first instance, and directed the Hong merchants to require the President of the Select Committee to order the captain of the ship concerned to release the Chinese, who was detained, and to deliver up the foreigner, who had fired the gun and wounded the Chinese on shore, and also to send the ship away. The edict issued was unusually moderate in tone. "On inquiry," said the Governor, "I find that the "object, which, from the first, brought foreigners to China, was the pursuit of "commerce and gain. How should they all at once presume to approach the interior "parts of the country and take to firing upon and wounding the Natives, and "carrying off villagers as prisoners, and, more than all, how should they have the "audacity to give utterance to words of disrespect and contempt? Viewing the tenor "of the report, I cannot but suspect that there have been mistakes made, owing to "their not understanding each other's language; and I think that there must be other "causes than those reported which led to the disturbance. These must be carefully "inquired into and sifted, that I may act accordingly and repress disorder. I have "observed foreigners to be generally respectful and complaisant in their language, "and not given to break the rules of propriety."

Pages 21 and 22 of the above Papers.

Mr. Plowden, who had returned to China as President of the Committee, and his colleagues disapproved highly of Captain Grant's proceedings, and directed him to at once release the Chinese detained as a prisoner, and to remove the "Hercules" from Cumsingmoon, threatening him with forfeiture of the ship's license, in the event of his resisting their authority. All other British ships at Cumsingmoon also were required to quit that anchorage.

Letter dated 16th November 1833; pages 7–10 of the above Papers.

"It has hitherto been our policy," wrote the Select Committee to the Court of Directors in an account of the occurrence, "as well as our interest, to profess non-"interference, as to what passes without the Bogue, with the quarrels and disturbances "which arise between the crews of the opium ships and the Natives; but we fear the "time has been gradually approaching, and has now arrived, when the system of "non-interference has reared up a power, and encouraged a lawless and piratical "mode of procedure, which it is absolutely incumbent upon us to put down."

Pages 22 and 23 of the above Papers.

In their reply to the Governor, however, the Committee evaded the demand made upon them for the surrender of the man who had fired the gun and wounded the Chinese, and disclaimed responsibility for the proceedings of the smugglers

outside the river. "Your Excellency," they wrote, "is doubtless aware that we are "in no way connected with the operations of the opium ships, carrying on their trade "in Lintin and its vicinity, without molestation or interference on the part of the "officers of the Canton Government, who alone are the proper authorities to put in "force the laws of the Chinese Empire."

The Chinese prisoner was released, and the opium ships withdrew for the time from Cumsingmoon; and although the Select Committee were involved in a protracted correspondence in regard to the case, the trade was not interrupted, and the friendly relations which existed between them and the Government were apparently not embittered. Mr. Plowden left China while the discussion was proceeding, and was succeeded as President of the Select Committee by Mr. (afterwards Sir John) Davis.

The Governor at the end of October modified his demand for the surrender of the man who had wounded the Chinese, so far as to merely require his detention at the factory, pending further orders; and the Chinese, who appeared upon inquiry to have been concerned in the death of the lascar, were arrested and imprisoned. The wounded Chinese expired, and on November the 5th the demand for the surrender of the offending foreigner was in consequence renewed. It was, however, temperately made; and as a life had been lost on each side, and the Committee had complied promptly with the orders issued for the release of the prisoner and the removal of the ships, the Governor was evidently not inclined to take a serious view of the case. "In this case," he said, "the Chinese and foreigners reciprocally fought, "and each has lost a life. The Chinese murderers are already caught; the foreign "murderer must be by the said ship's captain on an early day delivered up, and then "will be seen reverential submission."

Pages 25–27 of the above Papers.

Pages 32 and 33 of the above Papers.

On the 12th November the Governor again reduced his demand so far as to offer to the Committee a trial of the guilty persons by foreign law at Macao in the presence of a Chinese officer deputed for the purpose. "Of the origin of the present disturb-"ance on both sides," he said, "I, the Governor, have directed the Anchasze "(Commissioner of Justice) to depute an officer, who in conjunction with the local "officers has made investigation, and after repeated examinations he has decided that "the natives and foreigners were mutual offenders, and has framed a case accordingly. "It remains only for the Chief to deliver up the offenders to be tried respecting the "real circumstances. The natives will be punished according to the native laws, and "the foreigners shall be acted with according to the foreign laws, before an officer "sent to Macao for the purpose of witnessing it."

Pages 34 and 35 of the above Papers.

Howqua, also, in accordance, as he said, with a desire expressed to him by the Governor for an amicable settlement of the affair, proposed to the Committee that some person, guilty or innocent, should be sent to Macao to undergo a form of trial. This suggestion they rejected, though they declared themselves ready to assist the merchants in giving the Governor "an opportunity of getting out of the business," if they could do so consistently with their principles. In their reply to the Governor, they once more disavowed their responsibility for offences committed by persons engaged in the opium trade, and pointed out that it was not their business to enforce the laws of the Chinese Empire against smugglers of all Nations. "Although," they wrote, "we deeply regret the death of the foreign sailor and the "Chinese, we feel that the representatives of the East India Company conducting a "legal trade at Canton can be in no way accountable for such irregularities as the "affray at the Cumsingmoon, in which your Excellency observes the natives and "foreigners were mutual offenders."

Page 36 of the above Papers.

Finding that the President and members of the Committee were firm, the authorities who (in their own language) were anxious only "to make a luminous display of the "National Government," began to put pressure on the Hong merchants, and on the 3rd December 1833 the City Governor required them to order the President to deliver up the "murderous foreigner" in five days on pain of forfeiture of their buttons of rank.

Pages 40 and 41 of the above Papers.

The Committee, sent no reply to these orders, and other edicts by the Governor and City Governor, which followed, were similarly treated. The Hong merchants were constrained by this attitude to settle the case in their own way, and the requirements of Chinese justice were eventually satisfied by a subterfuge even more disgraceful than that adopted on the occasion of the homicide in 1820. "A rumour," wrote the Committee in their consultations of the 24th January 1834, "has "for sometime past been afloat of so extraordinary a nature that we were unwilling "to believe, and still more indisposed to act upon it, unless corroborated by some

Pages 48 and 49 of the above Papers.

" credible testimony. It seems that the mandarin brother of Howqua, the Hong " merchant, was sent down to Macao, with the view of devising some mode of " obtaining possession, if possible, of the individual who killed the Chinese in the " affray with the smuggling ships. He returned to Canton once without success, upon " which he was told that, unless he could contrive to succeed in some manner in his " mission, his peacock's feather would be taken from him. The result, we under- " stand, of his second visit to Macao was to procure, by the aid of a considerable sum " of money, the person of a Malay, or other man of colour, either from the town of " Macao, or from a junk or ship in the harbour, who was persuaded to assume the " character of brother to the lascar reported as having been killed in the same affray. " Rushing forward (it was pretended) to save his brother, a musket, which he had, " went off by accident, and caused the death of the Chinese. He was tutored to state " that his contrition had induced him voluntarily to deliver himself up, imploring " pardon, representing that an aged mother in his own country stood in need of his " services, a very common plea in China for granting pardon to criminals.

" As the above rumour gained strength, the President sent for Howqua, and " succeeded with some difficulty in making him confess that a man was actually in " Canton; but when former acts of perfidy and cruelty on the part of the Local " Government in nearly similar cases were urged as grounds for entertaining " apprehensions that the worst might happen on this occasion, Howqua asseverated, in " the strongest terms, that no such intention existed, but that the man would certainly " be released after the forms of a trial had been gone through, and the case had been " reported to Pekin.

Address to the Governor, dated 24th Jan. 1834, page 49 of the above Papers

The Committee protested strongly against this scandalous proceeding. " Under all " the circumstances of the case," they wrote, in an address to the Governor, " which " are as well known to your Excellency as they are to ourselves, we feel convinced " that your Excellency's far-famed justice and benevolence are the best security for " the ultimate safety of this innocent person. As, however, the affair in which this " poor man has been induced to involve himself is by report connected with English " as well as many other foreign ships on the coast, while the individual himself is " altogether alien to any participation in the alleged affray, we feel it only due to " ourselves to protest, and do hereby protest in the most solemn manner against any " violence or injury being offered to him; though we beg again to avow our convic- " tion that your Excellency's high sense of justice will never permit the commission " of an act of such atrocious cruelty."

Edict by the Governor, dated 28th Jan. 1834, page 50 of the above Papers.

The Governor at first was virtuously indignant. " The said foreigner," he replied, " has in obedience to the laws, voluntarily given himself up, and therein shown a " trembling regard to the Royal statutes. Let there be no turning and saying that he " has been seduced by some one, that he may be injured and so irregularly create " suspicions. Moreover the said Chief and others have stated that the affair at " Cumsingmoon was not one which it concerned them to arrange. Why do they now " abruptly present this petition?"

Address to the Governor, dated 29th Jan. 1834, page 51 of the above Papers.

The Committee, however, were determined to show that they were no parties to the arrangement, and submitted a second protest. " We cannot consider," they wrote, " the reply to our address as any assurance of this innocent man's safety, and as it is " in the name of the English that he is detained, we are called upon by our office " again to protest against any injury being offered to him. Should he be allowed to " become an unhappy victim to his own folly we hereby declare that after this public " declaration we cannot be held responsible for any consequences."

Edict by the Governor, dated 8th Feb. 1834, page 52 of the above Papers.

The Governor in reply professed himself unable to understand their allegations, but gave the required assurance as to the man's safety. " How," he said, " could an " innocent man be persuaded by others to confess himself guilty? Further there is " this expression. 'Because of his own folly,—and unhappily lose his life.' The affair " emanated from no intention of the heart, and assuredly will not lead to the forfeiture " of life."

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An edict, it may be here observed, was issued by the Chinese Government, in 1833, in which a severe punishment was prescribed for the purchase and smoking of opium. " Let," it was said, " the buyers and " smokers of opium be punished with one hundred blows, and condemned to wear the wooden collar for two " months. Then let them declare the seller's name, that he may be seized and punished; and in default of his " discovering the vendor, let the smoker be again punished with one hundred blows, and three years' banishment " as being an accomplice. Let mandarins and their dependants, who buy and smoke opium, be punished " one degree more severely than the others; and let Governors of Provinces be required to give security " that there are no opium-smokers under their jurisdiction; and let a joint memorial be sent in, representing " the conduct of those officers who have connived at the practice." (" China: Its State and Prospects, with " especial reference to the Spread of the Gospel," by the Rev. W. H. Medhurst.)

The Committee then asked that the man might be liberated, but this request was ignored, though the man was supposed to have been subsequently released. The fate of the Chinese arrested for complicity in the death of the lascar is not recorded.

Page 53 of the above Papers, and "China," by Sir John Davis.

The period for which the exclusive privilege of trading with China, and of trading in tea had been granted to the East India Company, was to expire on the 22nd April 1834; and on the 13th June 1833, the House of Commons considered the question of the renewal of the Charter. An attempt made by Sir George Staunton on the 4th June, to discuss the measures, which should be adopted in regard to the China trade, and to move certain resolutions, had been met by a count out; and Sir George, with the object of bringing the resolutions on the Journals of the House, moved them as an amendment to the motion for going into Committee. The resolutions, nine in number, were perhaps unnecessarily long, but contained (as might have been expected from Sir G. Staunton's knowledge of the subject) much solid matter for consideration. Among other things they affirmed that the influence of the East India Company had been the sole existing check on the arbitrary administration of the local Chinese authorities; and that, in the event of the termination of that influence, it was indispensably necessary that the trade should in future be conducted under the sanction of a national Treaty between the two countries, as "any attempt to appoint national functionaries at Canton for the "protection of trade would, in the existing state of the relations with China, be "liable to compromise the honour and dignity of the Crown;" and further, that if all attempts to obtain national protection for the trade should prove ineffectual, it should, in the last resort, be withdrawn altogether from the control of the Chinese authorities, and be established upon some island on the Chinese coast, where it would be beyond the reach of oppression and molestation.

Hansard's Parliamentary Debates, 3 series, vol. xviii., from 30 May to 1st July 1833.

The amendment was negatived without a division; and Mr. Charles Grant, the President of the Board of Control, then moved three resolutions, setting forth the principles and conditions upon which the Government proposed to renew the Charter, and to entrust to the Company the future government of the British possessions in India, while withdrawing from it its commercial privileges.

The first resolution dealt with the question of the China trade; and declared it to be "expedient that all His Majesty's subjects *should* be at liberty to repair to the ports of "the Empire of China, and to trade in tea and in all other productions of the said "Empire, subject to such regulations as Government *should* enact for the protection of "the commercial and political interests of this country."

Resolutions 2 and 3 dealt with the conditions upon which the Company's territory in India was to be transferred to the Crown and the Government of India in future carried on, and need not be further referred to in this narrative.

The subject of the China trade was one, as Mr. Grant said, on which the nation had made up its mind; but in the course of his speech he adduced a number of arguments to show that the view taken by the nation was correct.

A continuation of the Company's monopoly, in view of the progress of commercial enterprise, and of the changes which had been introduced in the commercial system of the country during the preceding 20 years, was, he said, impossible; and the gradual diminution in the profits of the Company, and the growth of the private trade, showed that the privilege granted had arrived at its natural termination. The Indian trade had been abandoned by the Company on account of the diminished profits derived from it; and in China, during a period of 15 years, the profits of the Company in the first quinquennium had been 1,300,000*l.*; in the second, 830,000*l.*; and in the third, 565,000*l.* In 1813–14, the total value of the exports and imports of the Company was 13,500,000*l.*, and of the private British merchants, 9,000,000*l.* In 1829–30, the value of the Company's exports and imports had fallen to 11,600,000*l.*, and the value of the exports and imports of the private traders, including opium, had risen to 31,000,000*l.* The existence of two parties, one in the enjoyment of a monopoly and the other carrying on business on the principles of free trade was, he thought, certain to produce embarassment and inconvenience.

The political relations of Great Britain with China constituted, in his opinion, a further reason for the abolition of the monopoly. The Chinese, he said, were intelligent, but they were also arbitrary and despotic; and circumstances might occur that would provoke a collision between the two countries, and it was therefore undesirable that the exclusive privilege of trading with them should be confined to one body of men. The servants of the Company in China were in an ambiguous and occasionally in a very invidious position. "They had nominally no power, but

" still they were at times obliged to interfere with all the weight of their national " character, and at other times to profess their utter inability to control individuals " belonging to the community they were thought to represent." The wars in which the Company had been compelled to engage in Nepal and Burma, were instanced as events well calculated to excite the jealousy of the Chinese; and if, as he said, instead of an intercourse with the Company, which they must regard more in the light of the sovereign of a powerful dominion in their immediate neighbourhood than as a body of merchants, the Chinese had to deal with a public functionary directly representing this country, and having the management of its interests at Canton, there would be less chance of any such jealousy arising.

The address of the Hong merchants to the Governor of Canton in 1831, on the subject of the termination of the Company's monopoly, and the Governor's reply were relied on as showing that the Chinese authorities were fully prepared for a change; and the civility, with which the members of Mr. Lindsay's expedition had been received at different places on the Chinese coast in 1832, was referred to as an illustration of the fact, that the people of China appeared to be anxious, not only for continuance but for an extension of commercial intercourse, although such extension was prohibited by the laws of the Empire. The House, moreover, was invited to recollect that though the laws of China prohibited the introduction of opium, it had been found impossible to exclude it; and the decrees of the Emperor upon the subject were compared to the denunciations of tobacco by James I. The proposal also made by the Governor of Canton in 1832 for the legalisation of the trade, was cited in justification of the belief that a more constant intercourse might tend to remove many of the restrictions then existing to commercial dealings with foreigners; and the abolition even of the Hong monopoly was suggested as a possible consequence of free trade on the part of Great Britain.

A Commission at Canton, representing the British Government, and armed with full powers to control and protect the interests of British subjects might, he thought, be able by prudent measures " to conciliate the Chinese authorities and " perhaps to remove that barrier which at present stood in the way of our general " commercial intercourse with that country." He deprecated direct negotiation with Pekin, in regard to the change of system, as being likely to arouse Chinese suspicions; and described the result of the former Embassies to Pekin as " far from encouraging." The dismissal with disgrace from the Emperor's presence of Lord Amherst's Embassy had not, as he said, been productive of any particular advantage to Great Britain; and he failed to see in what respect the Embassies had produced a respect for the national character among the Chinese. He differed, therefore, from Sir George Staunton in thinking that any attempt should be made to open negotiations with the Chinese Government, and added that the question of sending another Embassy to China had been considered on the occasion of the interruption of trade at Canton about two years before, and His Majesty's Ministers had come to the conclusion that the measure was open " to considerable objections."

Mr. Grant's arguments probably represented fairly enough the views that were in favour both with the Ministry and the public; and the Company's exclusive privilege had no defenders. Mr. Wynn, ex-President of the Board of Control, admitted that the time had come for throwing open the China trade to private enterprise; and Mr. Buckingham, who was opposed to the continuance of the Company's government in India, and who strongly denounced the opium trade and the attitude of the Company in regard to opium, said that he believed the abolition of the monopoly would effect more good than any change in the commercial policy of Great Britain that had taken place during the century. Even Mr. Marjoribanks, who had lately arrived in England from Canton, and Sir George Staunton, admitted that a change of system was necessary; and the resolutions were adopted without a division.

Act 3 & 4 Will. 4. c. 93, which was enacted, in accordance with the principles accepted in these resolutions to regulate in the future the trade to India and China, declared it to be expedient that the trade with China, and the trade in tea, should be open to all Her Majesty's subjects, and provided for the supervision of the China trade, and for the control and government of British subjects in that country, by Superintendents appointed for the purpose; and the connexion of the East India Company with China and the China trade was brought to an end on the 22nd April 1834.

Speech of the Duke of Wellington in the House of Lords on the

The Duke of Wellington had the foresight to doubt the wisdom of so sudden and radical a change of policy; and when the Act was under consideration, he proposed, as an amendment, that the Company should be allowed to continue to trade after the withdrawal of their exclusive privilege, and that the management of affairs at Canton should be retained in the hands of their representatives. The amendment, however,

was not adopted. The political friction, which had existed at Canton in 1829-32, served doubtless to discredit the Company's administration; and the difficulty of making any alteration in the relations of the country with a people so exclusive, and so conservative as the Chinese, was imperfectly appreciated.

12th May 1840, Hansard's Parliamentary Debates 3 Series, Vol. LIV.

## Chapter II.

William John, Lord Napier, a captain in the Royal Navy, Mr. Plowden, President of the Select Committee of the East India Company's supra-cargoes, and Mr., afterwards Sir John, Davis, a member of the Select Committee, were appointed by Royal Commission, on the 10th December 1833, to be the first Superintendents of the trade of British subjects with China; and orders were at the same time issued by the King in Council, defining the powers and authorities of the Superintendents, and creating a Court of justice, with Criminal and Admiralty jurisdiction, for the trial of offences committed by British subjects within the dominions of the Emperor of China, and on the high seas within 100 miles of the coast.

Letter from Lord Palmerston to Lord Napier dated 25th Jan. 1834; page 1 of the correspondence relating to China, presented to Parliament in 1840.

Orders of the King in Council dated 9th Dec. 1833; in additional papers (12 pages) relating to China, presented to Parliament in 1840.

By these orders all the powers and authorities over and in respect of the trade of British subjects at Canton, which were possessed by the supra-cargoes of the East India Company on the 21st April 1834, were vested in the Superintendents; all regulations touching the said trade, which existed on that date, save in so far as they were repealed or abrogated by the Act to regulate the trade to China and India, or by any orders issued by the King in pursuance thereof, or were inconsistent with the Act or with any such orders, were continued in force until the issue by His Majesty of further or other orders; and all penalties, forfeitures, or imprisonments, that might have been incurred, or enforced, for the breach of regulations existing on that date, were to be incurred for the breach of the same regulations, so far as they were continued, and were to be enforced by the ways and means that were formerly lawfully possible, or by the decision and sentence of the Court of justice established at Canton.

The Court was to be held at Canton, or on board of any British ship in the harbour of Canton, by the Chief Superintendent for the time being; the practice and proceedings were to be made conformable as far as possible with those of the Courts of Oyer and Terminer and Gaol Delivery in England; and every trial of any issue or fact, or of mixed fact and law, was to be held by the Chief Superintendent and a jury of 12 men. Provision also was made for the preparation, promulgation, and revision of the rules of practice and proceeding observed, and for the establishment of a system of record.

Instructions to the Superintendents of Trade under the Royal Sign Manual; dated 31st Dec. 1833; pages 2-4 of the correspondence.

His Majesty's instructions to the Superintendents required them, in execution of their Commission, to take up their residence and discharge their duties at the port of Canton, or at any other place within the river or port of Canton, or at any place which might be thereafter appointed, but not elsewhere.

One of the Superintendents was specially charged with the duty of collecting information regarding the trade between British subjects, or the subjects of any foreign Power, and the Chinese, and also regarding the production of tea and other articles of export from China; and was directed to transmit all information thus collected in the form of tables to the Secretary of State for Foreign Affairs.

All the Superintendents were required to watch over the interests of British subjects resident in, or resorting to, the Empire of China for the purpose of trade, and to afford them advice, information, and assistance in the conduct of their business; "to protect "them in the peaceful prosecution of all lawful enterprises," in which they might be engaged; to adjust, as far as possible, by their influence and authority, disputes between them and the inhabitants of China, or the subjects of any foreign Power, and disputes between British subjects one with another; and to use their influence with the officers of the Chinese Government in order to protect British subjects "from all unlawful exactions or hindrances in the prosecution of their "commercial undertakings."

Article 18 of the Instructions.

Any complaint or remonstrance to the officers of the Chinese Government, that might be found necessary in the conduct of such mediation, was to be preferred with all possible moderation; and the Superintendents were directed to cautiously abstain from all unnecessary use of menacing language, or from appeals for protection to the military or naval forces, except in cases of the most evident necessity; to avoid in the discharge of their duties "all such conduct, language, and demeanour, as might "needlessly excite jealousy or distrust amongst the inhabitants of China or the officers "of the Chinese Government, or as might unnecessarily irritate the feelings, or revolt "the opinions or prejudices of the Chinese people or Government"; and to "study "by all practicable methods to maintain a good and friendly understanding both with

" the officers, civil and military, and with the inhabitants of China," with whom they might be brought into communication.

Article 19 of the Instructions.

They were required to constantly bear in mind and impress, as occasion might offer, upon British subjects the duty of conforming to the laws and usages of the Chinese Empire, as long as those laws were administered with justice and good faith towards them, and in the same manner in which they were administered towards the subjects of China, or the subjects of other nations resident in, or resorting to, that country.

Neither the Superintendents, nor their Secretary, nor any subordinate officer employed by them, were to engage in trade, or act as agents for any trader, on pain of forfeiture of appointment.

The manner in which appointments to the offices of Second and Third Superintendents were to be provisionally made, in the event of Mr. Plowden or Mr. Davis being unable or unwilling to act, and the manner in which any vacancy occurring in the office of Chief, or of Second, or Third Superintendent, was to be provisionally supplied until such time as His Majesty's pleasure should be ascertained, were also prescribed.

Letter from Lord Palmerston to Lord Napier dated 25th Jan. 1834; pages 4 and 5 of the correspondence.

Further important instructions were conveyed in a letter to Lord Napier from Lord Palmerston.

1. Lord Napier was directed to announce his arrival at Canton by letter to the Viceroy (Governor).

2. He was informed that, in addition to the duty of protecting and fostering the trade of British subjects with the port of Canton, it should be one of his principal objects to ascertain whether that trade could not be extended to other parts of the Chinese dominions, and that for this end he should omit no opportunity of encouraging any disposition, he might discover, in the Chinese authorities, to enter into commercial relations.

3. He was to try and discover the best means of establishing direct communication with the Court at Pekin, with a view to the improvement of commercial relations, bearing constantly in mind the necessity for caution and circumspection lest " he " should awaken the fears, or offend the prejudices of the Chinese Government; and " thus put to hazard even the existing opportunities for intercourse by a precipitate " attempt to extend them." He was not, however, to enter into any new relations or negotiations with the Chinese authorities, without instructions from his own Government, except under very urgent and unforeseen circumstances; and if any opportunity for such negotiations should apparently occur, he was cautioned to take no measures, previously to the receipt of instructions, but such as might be calculated " to convince " the Chinese authorities of the sincere desire of the King to cultivate the most " friendly relations with the Emperor of China." He was informed also that Lord Palmerston did not " foresee any case in which it could be advisable that *he* should " leave Canton to visit Pekin without having previously obtained the approbation of " His Majesty's Government."

4. He was to avail himself of every opportunity for ascertaining the possibility of establishing commercial intercourse with Japan, and any other of the neighbouring countries.

5. He was to ascertain the best means of making a survey of the Chinese coast and the probable cost of such an undertaking; and to inquire whether there were any " places at which ships might find requisite protection in the event of hostilities in " the China seas." He was not, however, to commence any survey of the coast without authority from England.

6. The Superintendents were to be particularly cautious in regard to ships attempting " to explore the coast of China for purposes of traffic." " It is not desirable," wrote Lord Palmerston, " that you should encourage such adventures; but you must never " lose sight of the fact, that you have no authority to interfere with, or prevent them."

7. The Bocca Tigris was declared to be the limit of the port of Canton, and Lord Napier was directed to apprise the commanders of British ships of war that the Chinese regulations, which did not permit ships of war to pass the Bocca Tigris, should be observed, and that no ship of war should pass that point, " unless an " extraordinary occasion should require it to do so."

8. No proceedings were to be commenced under the Order in Council creating a Court of justice, until the subject had been carefully and thoroughly considered.

Extract from a letter from Lord Palmerston to Lord Napier dated 25th Jan. 1834; page 6 of the correspondence.

Lord Napier was informed at the same time that it was the intention of His Majesty's Government that the office or offices of Second and Third Superintendent should be offered to other gentlemen of the East India Company's factory, in the event

of Mr. Plowden or Mr. Davis being unwilling to serve on the Commission, in order that he might have the assistance of officers, with experience in China; and the office of Secretary also was to be similarly offered to one of the Company's servants.

It would not be difficult to indicate many points upon which the instructions issued to the Superintendents were incomplete, or illsuited to the requirements of the situation. The order requiring them to take up their residence and discharge their duties at Canton, though framed evidently in supposed accordance with the reply of the Governor to the representation made in 1831 by the Hong merchants regarding the approaching termination of the Company's monopoly, was in particular unfortunate, as the sanction of the Chinese Government to the permanent residence of foreigners at that city had not been given. The spirit of the instructions, however, was eminently conciliatory; and if the difficulties of cultivating a good and friendly understanding with Chinese officers and with the people of China, under the circumstances then existing, were imperfectly appreciated, it is clear that the Ministry were determined to avoid, as far as was in their power, any cause of offence to the Chinese Government.

No communication was made to the Chinese Government regarding the change in the commercial system of the country and the appointment of Government officers as Superintendents of British trade, and this, perhaps, was a mistake. It is clear, however, from Mr. Grant's speech in 1833 in the House of Commons, that no opposition to the change of system on the part of the Chinese was anticipated, and previous negotiation was evidently regarded as undesirable or unnecessary.

In April 1834, the Hong merchants applied to Mr. Davis, who was then President of the Select Committee, for information as to the intentions of the British Government, but Mr. Davis himself was imperfectly informed of the nature of the measures in contemplation, and accordingly evaded a reply; and Lord Napier's arrival in China was, therefore, the first official intimation which the Chinese Government received of the altered conditions of British trade.

Letter from Mr. Davis to Lord Palmerston dated 7th August 1834; pages 25 and 26 of the correspondence.

Lord Napier reached Macao in the "Andromache" on the 15th July 1834, and there met the Company's supra-cargoes. Mr. Plowden had left China, but Mr. Davis accepted the office of Second Superintendent, and Sir G. B. Robinson, another Company's servant, was made Third Superintendent, and Mr. Astell was appointed Secretary. An Order in Council had been issued in December 1833, imposing duties on the tonnage and goods of British ships trading to the port of Canton for the support of the establishment of Superintendents; and Captain Elliott, R.N., received an appointment as Master Attendant. The cost of the Commission, when fully constituted with a Secretary, Surgeon, *Chinese Secretary, &c., was 18.000*l.* per annum.

Letter from Lord Napier to Lord Palmerston dated 9th August 1834; pages 7–10 of the correspondence.

The Superintendents left Macao in the "Andromache" on the 23rd July, and proceeded to the anchorage at Chuenpee below the Bocca Tigris. There, on the 24th July, they left the "Andromache," and went on to Canton in the East India Company's cutter, arriving at 2 a.m. in the morning of the 25th July.

In the meantime, the Governor of Canton, on receiving a report of the arrival at Macao of a ship of war with a "barbarian Eye," (officer), who stated that he had been sent to assume superintendence of the British merchant vessels, despatched the Hong merchants to ascertain his object in coming to the Canton Province, and to inquire what new regulations should be established in consequence of the withdrawal of the Company's monopoly; and ordered them to authoritatively inform him that in accordance with the established laws of the Empire, no one, with the exception of †Taepans (trading chiefs) and other barbarian merchants, could be permitted to visit Canton without the orders of the Emperor, and that he must therefore either reside at Macao, or apply, through the merchants, for permission to proceed to Canton. The Governor, as appears from the orders which he issued to the Hong merchants, thoroughly understood the situation; and his anxiety to obtain orders from Pekin before permitting the Superintendents to establish themselves at Canton, was, it must be confessed, not unnatural. "The said Hong merchants," he wrote, "before reported "that this year the English Company is dissolved. The barbarian Eye, who has "now come, is of course, for the superintendence and examination of the business. "But the barbarian Eye is not comparable with the Taepans. If he wish to come to "Canton, it will be necessary to make first a clear report, requesting the Imperial "will on the subject."

Edict of the Governor to the Hong merchants Enclosure (2) in a letter from Lord Napier to Lord Palmerston dated 14th August 1834; page 17 of the correspondence.

* The Rev. Dr. Morrison was appointed as Chinese Secretary, but he died almost immediately after his appointment. His son, Mr. Morrison, eventually succeeded him.

† Taepan (trading chief) was apparently the word used in the Governor's edict to the Hong merchants dated 16th January 1834, regarding the anticipated dissolution (so called) of the East India Company. Page [illegible] of Governor Loo to the Hong merchants dated 11th September 1834. Pages 37–39 of the correspondence.

Letter from Lord Napier to Lord Palmerston, dated 9th August 1834; pages 7-10 of the correspondence; and letter from Mr. Davis to Lord Palmerston dated 7th August 1834; pages 25 and 26 of the correspondence.

The two senior merchants proceeded to Macao, but did not arrive there until the day after the departure of the Superintendents for Chuenpee in the "Andromache." They then hurried back to Canton, and made an attempt, on the 26th July, to communicate the Governor's orders to Lord Napier. His Lordship, however, considered that his instructions required him to communicate direct with the officers of Government, and that it would be impolitic and beneath the dignity of officers holding the King's Commission to make the Hong merchants the medium of correspondence. Mr. Davis, the Second Superintendent, fully concurred as to the advisability of insisting upon direct communication with the officers of Government. The Company's supra-cargoes, as managers of a large trading business, had, as he said, considerable influence over the merchants, but the Superintendents would have no such influence, and would be helpless if they were placed under the merchants' control.

Lord Napier therefore dismissed the merchants, with an intimation that he would "communicate immediately with the Viceroy in the manner befitting His Majesty's "Commission," and proceeded to report his arrival at Canton to the Governor by letter, as required by Lord Palmerston's instructions.

Enclosure in the above letter from Lord Napier to Lord Palmerston dated 9th August 1834; pages 10 and 11 of the correspondence.

The letter, which was under preparation when the Hong merchants appeared, was courteously worded, but was couched in terms that implied equality. It announced, that he had arrived at Canton under a Royal Commission, appointing him to be Chief Superintendent for the protection and promotion of the British trade to China, and associating with him as his colleagues, Mr. Davis and Sir G. Robinson, Bart., late of the East India Company's service; stated that the exclusive privilege of trading to China, which was possessed by the East India Company, had been withdrawn, and the trade of the Company had ceased, and that His Majesty the King of England had invested him with "powers, political and judicial, to "be "exercised according to circumstances;" and requested that the Governor would grant to him and his colleagues the honour of a personal interview at which he would explain more fully the nature of the changes that had taken place.

Letter from Lord Napier to Lord Palmerston dated 9th August 1834; pages 7-10 of the correspondence.

The letter was made over to the Secretary to the Commission, who was instructed to proceed with a deputation to the city gate, and there deliver it to a mandarin, and to avoid any communication through the medium of the Hong merchants.

Mr. Astell attempted to carry out these instructions; took the letter to the city gate, and there presented it to several mandarins, but they all refused to receive, or deliver it. After some time the Chinese linguists and Hong merchants arrived and entreated to be allowed to take the letter to the Governor, but Mr. Astell would not depart from his instructions. Objections were raised by some of the mandarins to the superscription of the communication as a letter; and the Hong merchants were said to be the proper channel for the transmission of correspondence on matters concerning trade. Eventually Mr. Astell, after waiting three hours and making repeated attempts to induce one of the mandarins to take the letter, was compelled to return to the factory without having accomplished his object.

On the 27th July, the Governor issued orders in regard to Lord Napier's arrival at Canton, without permission, and the attempt which he had made to communicate with him direct without the intervention of the merchants.

Edict of the Governor to the Hong merchants dated 27th July 1834; Enclosure 3 in the letter from Lord Napier to Lord Palmerston dated 14th August 1834; pages 18 and 19 of the correspondence.

"On this occasion," he wrote, "the barbarian Eye, Lord Napier, has come to Canton "without having at all resided at Macao to wait for orders. Nor has he requested or "received a permit from the Superintendent of Customs, but has hastily come up to "Canton, a great infringement of the established laws. The Custom house writers "and others, who presumed to admit him to enter, are sent with a communication "requiring their trial; but in tender consideration for the said barbarian Eye being "a new comer and unacquainted with statutes and laws of the Celestial Empire, I will "not strictly investigate.

"But it is not expedient that the said barbarian Eye should long remain at Canton "provincial city; it must be required that when the commercial business, regarding "which he has to inquire and hold jurisdiction, is finished, he immediately return to "Macao. And hereafter, without having requested and obtained a permit, he cannot "be permitted to come to Canton.

"As to the object of the said barbarian Eye's coming to Canton, it is for commercial "business. The Celestial Empire appoints officers--civil ones to rule the people, "military ones to intimidate the wicked. The petty affairs of commerce are to be "directed by the merchants themselves. The officers have nothing to hear on the subject. "In the trade of the said barbarians, if there are any changes to be made in regu-"lations, &c., in all cases the said merchants are to consult together, and make a joint "statement to the Superintendent of Customs and to my office. Whether the proposals "shall be allowed, or disallowed, must be learned by waiting for a reply publicly.

"If any affair is to be newly commenced, it is requisite to wait till a respectful "memorial be made, clearly reporting to the Great Emperor, and his mandate received. "Then it may be commenced, and orders may be issued requiring obedience.

"The great Ministers of the Celestial Empire are not permitted to have private "intercourse by letter with outside barbarians. If the said barbarian Eye throws in "private letters, I, the Governor, will not at all receive or look at them."

"Even England," he said, "has its laws, how much more the Celestial Empire."

The Hong merchants on the same day waited on Lord Napier, and suggested that the superscription of his letter should be altered, and that the word petition should be substituted for letter. To this Lord Napier refused to agree; and on the 28th, Howqua, the senior Hong merchant, again appeared, and informed him that the letter would not be received unless it was superscribed as a petition.

Letter from Lord Napier to Lord Palmerston, dated 9th August 1834; pages 7-10 of the correspondence.

His Lordship, however, was firm in his refusal to alter the superscription, and Howqua was dismissed. Lord Napier supposed that Howqua intentionally insulted him on this occasion, by using a Chinese character for his name, which had an unpleasant signification; but it seems probable that he was mistaken upon this point.

The usual measures were then adopted by the authorities for making things disagreeable. The East India Company's compradores were intimidated and compelled to desert; boatmen employed by Europeans on the river were withdrawn; and the boxes containing Lord Napier's personal effects were broken open at the Custom House, though the keys were available; this latter proceeding being, as Lord Napier said, a circumstance up to that time unprecedented.

On the 30th July, the Governor issued a third edict, directing the Hong merchants again to inquire for what purpose the barbarian Eye had come to Canton, and why he had presumed to do so without a permit, and to command him at once to leave the port and proceed to Macao, and reside there until the Emperor's will should be ascertained. The affair, as he said, concerned the "national dignity." The English traders up to that time had merely been allowed to appoint Taepans (trading chiefs), who visited Canton under permits, and an Eye (or officer) could not be compared with the merchants. The merchants also were threatened with judicial proceedings if they were remiss in the execution of the orders.

Enclosure 4 in the letter from Lord Napier to Lord Palmerston dated 14th August 1834; pages 19 and 20 of the correspondence.

Another edict followed on the 31st July; reproducing a communication from the Superintendent of Customs on the subject of a report, made by the Custom House officials, to the effect that a barbarian ship's boat had arrived at Canton, seven days before, shortly after midnight, with four English devils, who had taken up their residence in the factories, and that there did not appear to be any permit or pass authorising their entry into Canton. The orders issued on the 30th were accordingly reiterated; and the Hong merchants were again informed that they must not allow the barbarian Eye to linger about at Canton, and that they alone would be held responsible, if there was any opposition to the orders.

Enclosure 5 in the above letter; pages 20 and 21 of the correspondence.

The two senior merchants waited on the Superintendents on the 31st July, and attempted to enjoin the Governor's orders, but Lord Napier refused to hold any communication with them. Howqua then inquired what was the nature of his instructions, and his Lordship informed him that the Governor might ascertain this by a perusal of his letter.

On the 3rd August, the Captain of the "Andromache," which was still at Chuenpee below the Bocca Tigris, informed Lord Napier, that the Chinese Admiral had threatened to fire into the ship's cutter, if she attempted to pass up and down the river, and that he had assured him that such an insult would be resented. The "Andromache" was accordingly despatched for a week's cruise, but was ordered to anchor again, on her return, at Chuenpee.

Letter from Lord Napier to Lord [illegible] dated 14th August 1834; pages 11-16 of the correspondence.

On the 8th August, the merchants made another attempt to induce Lord Napier to leave Canton and return to Macao; which, as they urged, was a more agreeable residence during the hot weather, but Lord Napier refused to move.

Letter from Lord Napier to Lord Palmerston dated 9th August 1834; pages 7-10 of the correspondence.

Finding that Lord Napier was resolute, the Hong merchants then attempted to open communication with the British merchants; and on the 10th August, it was brought to Lord Napier's notice, that they had asked the British merchants to meet them on the following day at the Consoo House, or place of meeting of the Hong, at 1 p.m. His Lordship therefore convened a meeting of the British merchants at 10.30 a.m. on that day, to discuss the propriety of their compliance with the invitation; and he and Mr. Davis had apparently no difficulty in dissuading their countrymen from attending at the Consoo House.

Letter from Lord Napier to Lord Palmerston dated 14th August 1834 and Enclosure 1; pages 11-16 of the correspondence.

The merchants then forwarded the four edicts, which they had received from the Governor, dated 21st, 27th, 30th, and 31st July, in a letter addressed to the two leading

English firms (Jardine & Co. and Dent & Co.), and to the leading Parsee firm (Framjee Munchajee), with a request* that they would receive the edicts and reply to them; as the Governor held them personally responsible for the communication of his orders.

This the gentlemen in question naturally declined to do, but copies of the edicts were privately communicated to the Superintendents.

Postscript dated 17th August to the letter from Lord Napier to Lord Palmerston dated 14th August 1834; pages 15–16; and Enclosure 2 in a letter from Lord Napier to Lord Palmerston dated 21st August 1834; pages 23–25 of the correspondence.

In consequence of Lord Napier's refusal to submit his communications through the merchants, the shipment of cargoes in British vessels was prevented on the 16th August; and on the 18th, another edict was issued, in which the Governor threatened to stop the trade unless he should repent, obey the previous orders, and submit an answer through the Hong merchants. His arrival at Canton, without previous intimation, was once more characterised as a breach of decorum; and his attempt to establish direct communication by letter was said to be contrary to the laws of the Chinese Empire. "To refer to England," said the Governor, "should an official personage from a foreign "country proceed to the said nation, for the arrangement of any business, how could "he neglect to have the object of his coming announced in a memorial to the said "nation's King? Or how could he act contrary to the requirements of the said nation's "dignity doing his own will and pleasure? Since the said barbarian Eye states that "he is an official personage, he ought the more to be thoroughly acquainted with these "principles. Before, when he offered a letter, I, the Governor, saw it inexpedient to "receive it, because the established laws of the Celestial Empire do not permit "Ministers, and those under authority, to have private communication with outside "barbarians, but have hitherto, in commercial affairs, held the merchants responsible; "and if by any chance any barbarian merchant should have any petition to "make, requesting investigation of any affair, (the laws required) that by the said "Taepans a duly prepared petition should be in form presented, and answer by pro-"clamation awaited. There has never been such a thing as outside barbarians "sending in a letter." . . . . . "From the time Canton has admitted "outside barbarians to its open markets, all affairs relating to commerce and the "control over the barbarian merchants have been placed under the entire cognizance "and responsibility of the Hong merchants; never has there been such a thing as official "correspondence with a barbarian Eye . . . . . This request to have official "correspondence to and fro, is not only contrary to dignity and decorum, but also "would prove very inexpedient for the barbarian merchants of all the nations; "the thing is most decidedly impossible."

The Hong merchants, he continued, manifesting "a profound knowledge of the "great principles of dignity," had proposed a suspension of British commerce; but as the King of England had up to that time "been in the highest degree reverentially "submissive," and could not therefore have desired Lord Napier to assume an attitude of opposition, he was unwilling to cut off the livelihood of the British nation without giving the Superintendent another opportunity to distinguish between right and wrong. The merchants therefore were required to enjoin the edict upon Lord Napier, for his further consideration, and also upon the British residents and upon the foreign merchants of every nation at Canton.

Letter from Lord Napier to Lord Palmerston dated 21st August 1834; page 22 of the correspondence.

In the meantime, on the 17th August, the "Andromache" and H.M.S. "Imogene" returned to Chuenpee; and the Hong merchants called in a body upon the Chief Superintendent, upon the 18th, to inquire what was the reason of their arrival, and when would they depart. Lord Napier informed them that he was prepared to give the required information to the Governor, and that, if the Governor would admit him an interview, and would send a military officer to conduct him to his presence, he would dispense with the ceremony of sending a letter.

On the 19th, however, a reply was given verbally by two of the merchants, that the Governor declined to hold any communication with him, and required him to depart immediately.

Letter from Lord Napier to Lord Grey dated 21st August 1834; pages 26–28 of the correspondence.

On receiving this intimation, Lord Napier made up his mind that negotiation, to be of any use, must be supported by a show of force, and wrote to Lord Grey requesting that an expedition might be despatched from India to act along the coast, as it was, in his opinion, absolutely necessary to have the means of compulsion available, when negotiating with a Government constituted like that of China.

Letter from Lord Napier to Lord Palmerston dated 27th August 1834; page 29 of the correspondence.

On the 22nd August, the Hong merchants again visited the Chief Superintendent, and asked him if he would receive the Kwang Chow-foo (City Governor) and two other mandarins, whom the Governor proposed to depute to meet him, at 11 o'clock on the following day. Lord Napier agreed, and the meeting took place in the Com-

* Lord Napier says in his letter of the 14th August to Lord Palmerston that these gentlemen were asked to enjoin the edicts upon him. The wording of the Hong merchants letter is as above stated.

pany's factory, on the 23rd August. Considerable discussion took place with the Hong merchants in the morning in regard to the position of the chairs, and other arrangements necessary for the meeting; the merchants, apparently, wishing to give the place of honour to the Chinese officers, and Lord Napier insisting upon sitting at the head of a table with the City Governor on one side of him and the officer next in rank upon the other.

Statement by Lord Napier of what passed at the interview between him and certain Chinese officers on 23rd August 1834; enclosed in a letter from Lord Napier to Lord Palmerston dated 27th August 1834; pages 30-32 of the correspondence.

The arrangement of the chairs made under Lord Napier's orders was eventually accepted, but the discussion caused delay, and the Chinese officers did not arrive until 1 o'clock. Lord Napier treated this delay as an insult, and expressed much dissatisfaction, desiring the officers "to remember that whereas on former occasions, "they had only to deal with the servants of a private Company of merchants, they "must understand, henceforth, that their communications would be held with the "officer appointed by His Britannic Majesty, by no means inclined to submit to such "indignities."

The officers were then asked to state the object of their visit, and one of them said they had been sent by the Governor to demand the cause of his arrival in Canton, the nature of his business, and the intended date of his departure. Lord Napier, in reply, referred to Governor Le's edict of the 16th January 1831, regarding the appointment of an English chief at Canton, for the management of commercial business, on the dissolution of the East India Company; informed the mandarins of the appointment of himself and his colleagues as Superintendents of the trade, and said that the nature of his duties was described in his letter to the Governor, which they might either deliver or, if they so wished, open and read, on the condition that it should be deposited, as an official document, among the archives of the Government. The date of his return to Macao, he added, would be decided in accordance with his own convenience.

Conversation followed, in the course of which the officers observed that the King of England should have written a letter to the Governor in advance, announcing his objects and wishes, for communication to the Emperor; and Lord Napier informed them, that it was incompatible with the King's dignity to correspond with the Governor, and that he, as an hereditary nobleman of high rank, was on a perfect equality with the Governor, and was a proper person to conduct any such correspondence.

The officers were unwilling either to deliver Lord Napier's letter to the Governor, or to open and peruse it themselves; and an attempt was made to induce him to consent to the letter being opened by the Hong merchants. To this, however, his Lordship firmly refused to agree. The officers then made a further attempt to elicit information regarding the nature of his duties; but he informed them, that it was "quite "impossible, as well as irregular, to communicate important official business through "the medium of common conversation," and recommended them to consult the Governor again upon the subject.

The proceedings terminated amicably; and the officers departed, hinting that "they "might possibly return in a little time." One of them remarked, before leaving, that it would be very unpleasant if the two nations were to come to a rupture; to which Lord Napier replied, that the English were perfectly prepared, but that the King was most anxious to maintain friendly intercourse with the Emperor of China. "The discussion," wrote Lord Napier, "which took place previous to the meeting, "relative to the disposition of the chairs, although of itself in any other country a "matter of trivial importance, yet among people like the Chinese, whose actions are "entirely governed by etiquette, it is considered by the Superintendents, that the "mandarins, having yielded up the point, afforded to them the strongest proofs of "the propriety and necessity of conducting their business with firmness and determination; being satisfied that a steady perseverance will be attended with success, "but the slightest concession, on their parts, is sure to be followed by subsequent "embarrassment and defeat."

Memorandum prepared in the Foreign Office in Feb. 1840; pages 32-39 of the correspondence.

On the 26th August, Lord Napier, hearing that the Chinese authorities had spread reports, which gave a false colour to the occurrences of the past month, and were, in his opinion, calculated to affect injuriously the dignity of the Commission, published in Canton a manifesto, in Chinese, setting forth the circumstances for the information of the Chinese people. The stoppage of the trade was ascribed to the ignorance and obstinacy of the Governor in refusing to receive a letter from a "man of equal rank "with himself;" correspondence through the Hong merchants was said to be "derogatory to the dignity of a representative of the King;" and the statement ended with the following appeal to the people against their rulers. "The consequence "is, that thousands of industrious Chinese, who live by the European trade, must "suffer ruin and discomfort through the perversity of their Government. The

" merchants of Great Britain wish to trade with all China on principles of mutual " benefit. They will never relax in their exertions until they gain a point of equal " importance to both countries, and the Viceroy will find it as easy to stop the current " of the Canton river, as to carry into effect the insane determination of the Hong."

The publication of this statement appears to have caused considerable excitement in Canton, and the authorities promptly published the following counterblast:—" A " lawless foreign slave, Napier, has issued a notice. We know not how such a dog " barbarian of an outside nation as you, can have the audacious presumption to call " yourself a Superintendent. Being an outside savage Superintendent, and a person in " an official position, you should have some little knowledge of propriety and law. " You have passed over 10,000 miles in order to seek a livelihood; you have come to " our Celestial Empire to trade and control affairs; how can you not obey well the " regulations of the Empire? You audaciously presume to break through the barrier " passes,—going out and in at your pleasure, a great infringement of the rules and " prohibitions. According to the laws of the nation, the Royal Warrant should be " respectfully requested to behead you; and openly expose (your head) to the " multitude, as a terror to perverse dispositions."

The distribution of religious tracts by native Protestant converts at Canton, which had been carried on without interruption since 1832, was, at the same time, interdicted by proclamation,* and a persecution of the small native Christian community was commenced.

Letter from Lord Napier to Lord Palmerston dated 28th August 1834; page 32, and Memorandum prepared in the Foreign Office in Feb. 1840; pages 32-39 of the correspondence.

On the 28th August, the two senior Hong merchants again visited the Chief Superintendent, and asked him to receive four mandarins on the 30th. Lord Napier consented; and the merchants then raised some objection to the manner in which the mandarins had been received at the first meeting, and proposed that the position of the chairs, as fixed on that occasion, should be altered, and that the mandarins should bring a linguist to act as interpreter. Lord Napier refused to agree to any alteration in the position of the chairs, or to the substitution of a Chinese linguist for Mr. Morrison, as interpreter on the occasion; but said that he had no objection to the attendance of a linguist, if the mandarins so wished. The merchants then withdrew, promising to return on the following day. This they did, and renewed their arguments, but Lord Napier adhered to his decision; and the merchants went away promising to report what had happened to the mandarins, and to call again on the 30th. This promise they failed to keep; and it does not appear that they had any more communication with Lord Napier.

Minutes of conversation between Howqua and Mowqua Hong merchants, and Mr. Jardine, dated 14th Sept. 1834; pages 71 and 72 of the correspondence.

On the 2nd September, however, the two senior merchants opened (apparently with the approval of the Governor) a negotiation with Mr. Jardine, who appears to have been the leader of what may be described as the aggressive party among the British merchants at Canton, with the object of effecting an adjustment of the difficulties which had arisen; and upon the 3rd September terms were proposed for Lord Napier's acceptance.

The terms, which provided for the withdrawal of the embargo on the trade on the understanding that Lord Napier should leave Canton immediately after, and not openly return until the Emperor's orders had been obtained regarding his appointment, were not unfavourable, and Lord Napier appears to have been prepared to accept them; but in the evening of the same day the merchants reported that the Deputy Governor and other Chinese officials had brought pressure to bear upon the Governor, and had prevented him from assenting to any arrangement.

Memorandum prepared in the Foreign Office in Feb. 1840; pages 32-39 of the correspondence.

The Governor then published, on the 4th September, an edict dated the 2nd, confirming the stoppage of the trade of all British subjects, with effect from the 16th August; directed the forts and guard houses to permit British ships and boats to leave, but not to enter, the port, and ordered all Chinese workmen, boatmen, and others to leave the British factories. The linguists also appear to have been tortured, and one of the Hong merchants imprisoned, for their supposed share in the Chief Superintendent's disregard of the regulations.

Minute by Sir George Robinson in the proceedings of

Lord Napier's residence was surrounded on the 4th September with soldiers; his Chinese servants were driven away, and his supplies of provisions were cut off;

* The proclamation, which was issued upon the subject by the magistrate of one of the divisions of the city of Canton, was to the following effect:—"Whereas the printing of obscene and idle tales by booksellers has long " been a matter of legal prohibition, it having now been discovered that there are persons who fraudulently " make depraved and obscene books of the outside barbarians, and falsely assuming the pretence of admonishing " to virtue, print and distribute them, which is in a high degree contrary to law; orders are therefore hereby " given to the police runners to make strict examination for them; to ascertain correctly the shop where the " books have been printed; and to burn and destroy the blocks used. If any rashly presume to print and " distribute such books, they shall assuredly be seized and punished with the utmost rigour of the law."—(China: its State and Prospects, with especial reference to the spread of the Gospel, by the Rev. W. H. Medhurst.)

and Sir George Robinson was informed by several Chinese that the authorities had threatened to confine the Chief Superintendent so as "to prevent his escape." Mr. Davis, the Second Superintendent, was at this time at Macao, where he had been sent on duty at the end of August.

the Superintendents, dated 27th Sept. 1834; submitted separately to the House of Commons, in accordance with an address, dated 3rd April 1840.

His Lordship accordingly on the 5th sent Sir G. Robinson to Chuenpee to request the captain of the "Imogene" to bring the "Imogene" and the "Andromache" up the Canton river to Whampoa, for the more efficient protection of British subjects and their property, and to send up to Canton a guard of marines, to ensure the security of the premises which were occupied by the Superintendents, and which contained also the East India Company's treasure. The Company's agents at Macao were, it may be observed, ignorant of Lord Napier's intention, and reported subsequently to the Court of Directors, that they had not entertained any apprehension in regard to the treasure; but the agents were hardly disinterested spectators of the proceedings, and considerable alarm certainly appears to have existed at the time, among British merchants at Canton, in regard to treasure there stored.

Letter from the Company's Agents to the Court of Directors dated 29th Sept. 1834; pages 41–43, and Foreign Office Memorandum on the above letter dated Feb. 1840; page 42 of the correspondence; and letter from Mr. Astell to Mr. Backhouse, dated 28th Sept. 1834; pages 39 and 40 of the correspondence.

On the 6th September, a guard of a few marines arrived at Canton; and on the 8th September, the British frigates passed the Bocca Tigris and proceeded up the river to Whampoa. The forts opened fire, and the frigates were compelled to silence them in self-defence. Two British seamen were killed. The Chinese loss was not ascertained.

The frigates were not interfered with at Whampoa, but all communication between Whampoa and Canton was closed; and Lord Napier was accordingly cut off from his colleagues. Steps also were taken to block the river, and prevent the passage of boats to Canton; and other precautionary measures of defence and offence were adopted by the Chinese in anticipation of hostilities.

Memorandum prepared in the Foreign Office in Feb. 1840; pages 32–39 of the correspondence.

On the 8th September, Lord Napier addressed a letter to the Secretary of the Canton Chamber of Commerce, for communication to the Hong merchants and the Chinese authorities; in which he attempted to refute the Governor's assertion, that the Ministers of the Chinese Empire were not permitted to have intercourse with outside barbarians, quoting a number of instances from the time of Weddell, in 1637, when, as he supposed, such intercourse had been allowed; protested strongly against the stoppage of the trade with effect from 16th August, as business had been transacted by British merchants, under the sanction contained in the Governor's own orders, up to the 2nd September; and warned the Hong merchants that, if any disagreeable consequences should ensue, they and the authorities would be entirely responsible. "I recommend them," he wrote, "to take warning in time. They have opened the preliminaries of "war; they destroy trade, and they incur loss of life on the part of the unoffending "people, rather than grant to me the same courtesy, which has been granted to others "before me. They are all aware that the King, my master, sent me here in con-"sequence of Howqua's advice to Governor Le; and therefore why do they daily "contend against their own actions, to the destruction of trade and the misery of "thousands. But let the Governor or Lieutenant-Governor know this, that I will "lose no time in sending this true statement to H.I.M. the Emperor at Pekin; and "that I will also report to his justice and indignation the false and treacherous "conduct of Loo, Governor, and of the present Kwang Chow Foo, who have tortured "the linguists, and cruelly imprisoned a respectable individual, Sun-ching, a security "merchant, for not having acquiesced in a base lie, purporting that I arrived at "Canton in a merchant ship; whereas they are both aware that I made my passage, "and arrived in one of the ships of war now at anchor in the river. His Imperial "Majesty will not permit such folly, wickedness, and cruelty as they have been "guilty of since my arrival here to go unpunished; therefore, tremble Governor Loo, "intensely tremble."*

This letter produced an edict in reply from the Governor on the 11th September. "In everything relating to the trade of the English barbarians at Canton," he said, "there have long been established rules. There has never been such a thing as a "residence here of a barbarian officer or Superintendent. The great Ministers of the "Celestial Empire, unless with regard to affairs of going to Court, and carrying tribute, "or in consequence of Imperial commands, are not permitted to have interviews with "outside barbarians. The affairs of the former Ming dynasty (Captain Weddell's "affair) need not be brought into discussion. How have any officers of the great "Tsing dynasty had intercourse to and fro with barbarians? As to the intercourse "between barbarian officers and those who have formerly held the office of Governor, "in the years of Kienlung and Keaking (1736 to 1820), referred to in the paper copied

* This was a customary termination of the edicts issued by the Governor in regard to Lord Napier.

" by the said merchants, perhaps when the said nation has sent tribute there may " have been interviews given to the tribute bearers; otherwise there certainly has not " been this ceremony. This even the said nation's private merchants must all be " aware of."

Le's edict to the merchants, he continued, contemplated the appointment of a Taepan or trading chief, and not of a Superintendent; and the intention of the Chinese to manage the affairs of trade through the medium of merchants, even if a Superintendent were appointed over the English merchants, was distinctly stated. Lord Napier's conduct since his arrival in Canton was then reviewed, and his defiance of the regulations, in bringing arms into the English factory, and ordering the ships of war to push forward into the inner river, was specially noticed and condemned. "If, " however," he concluded, "the said barbarian Eye will speedily repent of his errors, " withdraw the ships of war, and remain obedient to the old rules, I will yet give him " some slight indulgence. If he still adhere to stupidity, and do not arouse, maintain " his wickedness, and do not change, he will be sinning against the Great Emperor; " and I, the Governor, will certainly find it difficult again to display endurance and " forbearance, I apprehend that when the Celestial troops once come, even precious " stones will burn up before them."

Minutes of conversation between Howqua and Mowqua, Hong merchants, and Mr. Jardine, dated 14th Sept. 1834; pages 71 and 72 of the correspondence.

On the same day, that the edict was published, the three senior Hong merchants went again to Mr. Jardine, and asked him once more to use his influence to procure an amicable settlement of the dispute, promising that if Lord Napier would send the frigates out of the Canton river, the trade would be re-opened. Lord Napier, on hearing of this proposal, wrote to Mr. Jardine stating the terms that he was prepared to accept. Put briefly, these were:—(1.) That an order should be issued, permitting Chinese servants to return to the factories and the shopkeepers to sell provisions, and that the guard should then be sent back to the ships, and the captains of the frigates requested to return at once to Chuenpee. (2.) That the British merchants should petition the Governor to permit trade; and that the Governor, on receiving the petition, should issue an edict, withdrawing the order of suspension, and admonishing the Chinese to treat the British and other foreigners in future with respect and hospitality. (3.) That as soon as the trade should be opened, one of the frigates should be sent to India to countermand the reinforcements expected from that country. (4.) That he should have the privilege of passing freely between Macao and Canton, whenever necessary.

This letter was read to the Hong merchants in a body at the Consoo House; and, according to Mr. Jardine, they said unanimously that they would be able to obtain the assent of the authorities to the terms proposed. On the 13th September, however, the two senior merchants informed Mr. Jardine that the terms were inadmissible, and proposed others. He told them to commit any further proposals they had to make to writing, and the negotiations ended.

Finding that the Governor would not consent to permit trade, as long as he remained at Canton, Lord Napier decided on the 14th September to remove the Commission temporarily to Macao, and published a circular to the British merchants announcing his determination. His Lordship's health had suffered from the change of climate on the voyage to China; and the heat and confinement at Canton, and the insults and annoyances to which he had been exposed, brought on an attack of fever, and he became seriously indisposed.

Letter from Mr. Astell to Mr. Backhouse, dated 28th Sept. 1834; pages 39 and 40; Memorandum prepared in the Foreign Office in Feb. 1840, pages 32-39; and letter from Mr. Davis to Lord Palmerston, dated 12th Oct. 1834; pages 43 and 44 of the correspondence.

On the 21st September, therefore, he wrote to the captain of the "Imogene," requesting him to move the frigates from Whampoa to Lintin; and left Canton for Macao in Chinese boats the same evening, Mr. Colledge, the Surgeon to the Commission, having arranged with the Hong merchants, that he should be allowed to proceed by the inner passage so as to shorten the journey. The boats conveying the party were delayed on the way, until the Chinese had received news of the departure of the frigates from the river; and Lord Napier appears to have been insulted and badly treated throughout the voyage. His illness was naturally aggravated by this treatment, and he died 15 days after his arrival at Macao on the 11th October.

Lord Napier was placed in a position of extraordinary difficulty. His instructions undoubtedly led him to suppose, that he was to correspond with the Canton authorities in a manner befitting the dignity of the representative of the British nation; and it is clear that the Chinese had no intention of permitting such correspondence, and that they were firm in their determination to treat the English, as they had always done, as their inferiors both in power and in civilisation.

A memorial from the officers of the Local Government, reporting to the Emperor, with the customary Chinese embellishments, the occurrences at Canton from the date of Lord Napier's arrival up to the date of the suspension of British commerce, contains the following significant passage:—"The said barbarian Eye would not receive the "Hong merchants, but afterwards repaired to the outside of the city, to present a "letter to me, your Majesty's Minister, Loo. On the face of the envelope, the forms "and style of equality were used; and there were absurdly written the characters— "great English nation—(Great Britain). Examining at that time, it appeared that in "keeping apart the central and the outside (people), what is of the highest importance "is a maintenance of dignity and sovereignty. Whether the said barbarian Eye has "or has not official rank, there are no means of thoroughly ascertaining. But though "he be an officer of the said nation, he cannot write letters on equality with the "frontier officers of the Celestial Empire."

Enclosure 1 in a letter from Mr. Davis to Lord Palmerston dated 18th Nov. 1834, pages 62–66 of the correspondence.

It is not too much to say that no matter what his diplomatic abilities might have been, he would not have succeeded in establishing himself in the position contemplated by his instructions. He was, however, unquestionably ill-fitted for the task. His correspondence shows that he was imperious, and was inordinately sensitive on the subject of the dignity of his Sovereign and of the British nation; and he appears also to have been badly informed in regard to the history of British relations with China, and to have been unfortunate in the advisers, upon whom he relied at Canton. For the East India Company and their policy he had evidently not much respect. "It was not," he wrote upon one occasion, "until 1786, I think, that "Kienlung confined us to the port of Canton; and since which time, the trade being "merely a question between a company of merchants in London and the Chinese "Government, the two parties have continued to play into each others' hands to their "mutual advantage, without any reference to the convenience, comfort, and advantage "of the people. Had the monopoly never existed, is it possible to conceive that the "British commerce would ever have been confined to the port of Canton? The bare "idea of such a predicament is absurd." It is not likely, therefore, that he was much influenced by the two Company's servants who were associated with him as Superintendents; but Sir G. Robinson, at any rate, appears to have entirely concurred with him throughout, and Mr. Davis was in accord with him as to the expediency of establishing direct communication with the Chinese authorities, and of refusing to correspond with them through the medium of the Hong merchants. His methods, however, rather than his objects, were open to adverse criticism.

Letter from Lord Napier to Lord Grey, dated 21st August 1834; pages 26–28 of the correspondence.

Letter from Lord Napier to Lord Palmerston, dated 9th August 1834; pages 7–10; and letter from Mr. Davis to Lord Napier, dated 7th August 1834; pages 25 and 26 of the correspondence.

Up to the 9th August, he appears to have contemplated the attainment of the objects of his appointment by pacific means; but Chinese arrogance soon goaded him to desperation. Five days later, on the 14th August, he expressed an opinion that, in the interests of Great Britain and of all civilised nations, a commercial Treaty should be negotiated with China, throwing open the country to trade; and that if the Chinese Government was not prepared to enter into such a Treaty, it should be coerced. "The Chinese," he wrote, "are most anxious to trade with us; the Tartar viceroys "cannot comprehend it. If the Emperor refuses our demand, remind him he is only "an intruder; and that it will be his good policy to secure himself upon his throne by "gratifying the wishes of his people. Remind him that the British traded to all "ports of China before his dynasty escaped from the wilds of Tartary; and that even "one of his early forefathers not only opened all his ports to foreigners, but invited "them to settle and spread civilisation in his Empire. The Chinese all read, and are "eager for information; publish among them and disseminate far and wide your "intentions—that is all your intentions both towards the Government and themselves. "Disclaim every view of conquest, or of holding partial possession beyond a certain "time; disturb not the passage of their vessels or the tranquillity of their towns; only "destroy their forts and batteries along the coast, and on the river sides, without "interfering with the people. Such annoyances to the batteries, of course, only to be "carried into effect in case of the obduracy of the Emperor. Three or four frigates "and brigs with a few steady British troops, not sepoys, would settle the thing in a "space of time inconceivably short. Such an undertaking would be worthy the "greatness and the power of England, as well from its disinterestedness towards "other nations, as from the brilliant consequences which must naturally ensue."

Letter from Lord Napier to Lord Palmerston, dated 14th August 1834; pages 11–16 of the correspondence.

Again, in the same letter he discussed the possibility of a suspension of trade in the following terms:—

"My present position is, in one point of view, a delicate one, because the trade is "put in jeopardy, on account of the difference existing between the Viceroy and myself. "I am ordered by His Majesty to go to Canton, and there report myself by letter to

" the Viceroy. I use my best endeavours to do so, but the Viceroy is a presumptious " savage, and will not grant the same privileges to me that have been exercised con- " stantly by the Chiefs of the Committee . . . . . What then remains but the " stoppage of the trade, or my retirement? If the trade is stopped for any length of " time, the consequences to the merchants are most serious, as they are also to the " unoffending Chinese. But the Viceroy cares no more for commerce, or for the comfort " and happiness of the people, as long as he receives his pay and plunder, than if he did " not live among them. I cannot hazard millions of money for any length of time on " the mere score of etiquette. If the trade shall be stopped, which is probable enough " in the absence of the frigate, it is possible I may be obliged to return to Macao to let " it loose again. Then has the Viceroy gained his point, and the Commission is " degraded. Now, my Lord, I argue, that whether the Commission retires by force of " arms, or by the injustice practised on the merchants, the Viceroy has committed an " outrage on the British Crown, which should be equally chastised. The whole system " of government here is that of subterfuge, and shifting the blame from the shoulders " of the one to the other. Act with firmness and spirit, and the Emperor will punish " the Viceroy, as the mandarin* did the wood cutter for Mr. Innes."

Lord Napier was no doubt right in thinking that the Chinese Government would only agree under pressure to accord better treatment to British subjects, or to foreigners generally, than they had up to that time received; but his methods were injudicious, and his advocacy unconvincing, and the impossibility of attaining the objects contemplated by pacific measures required further demonstration.

Enclosure (1) in a letter from Mr. Davis to Lord Palmerston, dated 18th Nov. 1834; pages 62–66 of the correspondence.

The only mention of opium, it may be noticed, throughout these proceedings, occurs in the memorial from the officers of the Local Government of Canton to the Emperor, which has been already referred to, and is to the following effect: " But the barbarians " are by nature insatiably avaricious, and the more forbearance and indulgence are " shown to them, the more do they become proud and overbearing. At present, the " barbarian ships, which clandestinely sell opium in the outer seas, are daily increasing. " Just when the laws were being established to bring them to order, there further " came this mad mistaken barbarian Eye. If at this time indulgence be at once shown " to them, they will then advance step by step, begetting other foolish expectations. " It is unavoidable that some slight display should be made of reducing and repressing " them."

Edict of the Governor of Canton, Enclosure 1 in a letter from Captain Elliott to Mr. Backhouse, dated 17th Nov. 1834; pages 58–61 of the correspondence.

The Government at Pekin on hearing that the English ships of war had forced an entry into the inner river was much incensed, and the Governor of Canton and other officials were sharply called to account. " It seems," wrote the Emperor, " that all " the forts have been erected in vain; they cannot beat back two barbarian ships; it " is ridiculous, detestable. If the military operations be reduced to such a state as " this, it is not surprising that the barbarians regard them slightingly."

Governor Loo was deprived of his two-eyed peacock's feather and of the title of guardian of the Heir-apparent, and was also degraded from official rank, but was temporarily retained in the office of Governor; the Naval Commander-in-Chief was degraded; and the naval and military officers in command at the Bocca Tigris were condemned to wear the Cangue or wooden collar in public, and were tried and some of them tortured, to ascertain whether they were guilty of traitorous connexion with the foreigners. " When once," said the Emperor, " the said barbarian Eye is brought " under, his schemes exhausted, and his power isolated, so that he bows his head " and confesses his faults, a slight trifling indulgence may then be extended to him " . . . . If he still continue obstinately blinded, and do not arouse, but remain " perverse as before, let then the said Governor and his colleagues arrange and direct " the military operations and set in motion, the machinery of expulsion and destruc- " tion. It is absolutely requisite to make the said barbarian Eye tremble and quake " before the Celestial Majesty, and penitently arouse to reverential submission."

Edict of the Emperor in reply to a memorial of the officers of the Local Government at Canton, reporting Lord Napier's departure, dated 7th Oct. 1834, in Extracts from the Records of Proceedings dated 8th Dec. 1834: pages 74 and 75 of the correspondence.

On hearing the news of Lord Napier's departure, however, the Emperor expressed his satisfaction at the manner in which the affair had been managed. " Now," he wrote, " having driven the said barbarian Eye and others out of the port, the said " Governor and others, although at the beginning they failed in a preventive guard, " have in the end been able to settle the thing well and securely, without loss of the " national dignity, and without incurring any bloody strife. I, the Emperor, am " exceedingly well pleased." Loo accordingly received back his title and his peacock's feather, but remained deprived of official rank, though continued in the office of

* An account of this incident is given at pages 50 and 51 of this narrative.

Governor, and the naval and military officers under examination were ordered to be released after wearing the Cangue for a month.

On the death of Lord Napier, Mr. Davis succeeded to the office of Chief, and Sir G. Robinson and Mr. Astell to the offices of Second and Third Superintendents; and Captain Elliot, whose appointment as Master Attendant had been rendered unnecessary by the rescission of the Order in Council imposing duties on the goods and tonnage of British ships, became Secretary to the Commission.

The suspension of the trade was removed by the Governor, as soon as Lord Napier withdrew to Macao, and business at Canton went on as usual; and, pending the arrival of instructions from England, Mr. Davis decided to remain quiet at Macao. "In the absence of any advances on the part of the Chinese," he wrote to Lord Palmerston, "a state of absolute silence and quiescence on our part seems the most "eligible course, until further instructions shall be received from home. At the same "time, that this line of procedure hazards nothing, and that the business of the "shipping goes on, it may occasion to the Local Government, a feeling of uncertainty "and suspense as to the future, calculated to draw from them some advances, which "might be turned to good account."

Letter from Mr. Davis to Lord Palmerston, dated 12th Oct. 1834; pages 43 and 44 of the correspondence.

The Governor of Canton adhered to his resolution, to neither recognise the Superintendents nor permit them to reside at Canton; and the agents of the East India Company were requested by the Hong merchants not to sublet any portion of their factory to the Superintendents, during the continuance of their lease.

The trade, both licit and illicit, proceeded briskly; but the absence of any controlling authority among the British merchants soon made itself felt, and on the 19th October the Governor issued the following order to the Hong merchants:—"For all affairs of trade it is requisite and necessary to choose a person as head "and director, that there may be someone to sustain the responsibility. The "merchants have already been before commanded to examine and deliberate, "but have not yet made any report in answer. Uniting the circumstances this "order is issued. When the order reaches the said merchants, let them immediately "obey and act accordingly, and instantly make known to all the separate merchants "of the said nation, that they are in a general body to examine and deliberate "what person ought to be made the head for directing the said nation's trade, "and forthwith to report in answer. Thereafter the responsibility of conducting "public affairs shall rest on the barbarian merchant who becomes head and director."

Enclosure 1 in a letter from Mr. Davis to Lord Palmerston, dated 2nd Nov. 1834; page 47 of the correspondence.

The reply submitted by the Hong merchants did not satisfy the Governor, who, on the 20th October, issued a second order:—"Now the Company has terminated and is "dissolved, and the said nation's barbarian merchants come hither to trade, each for "himself. If some other Taepan be not appointed, all affairs will become scattered, "out of order, and without arrangement; just as is the case with the barbarian ships "now anchored in the offing of Maton (Lintin), which neither come up to Whampoa "to trade, nor yet get under weigh; and the said nation's sampan vessels presume of "themselves to sail in and out, not submitting to examination. And when ordered to "inquire and investigate, the Hong merchants make excuses of ignorance. What "state of things is this? . . . . When I, the Governor, commanded to decide "respecting a person to be a directing head, it was with consideration as to the said "senior merchants transacting public affairs; it was not at all with regard to the "barbarians buying and selling. What the said merchants have reported, is wholly "with respect to the bartering of goods; there is no regard shown to public affairs. "This is, indeed, a great misunderstanding. Let them again consult and deliberate "with their whole minds, and report in answer.

"And, at the same time, let them act in obedience to the other order, and make known "to the said nation's separate merchants, that they are immediately with haste to send "a letter home to their country, calling for the renewed appointment of a commercial man, acquainted with affairs, to come to Canton and sustain the duties of "Taepan, to direct buying and selling, and to restrain and control all the merchants. "Specially, do not again cause a barbarian Eye to come hither to control affairs, "thereby occasioning, as Lord Napier did, the creation of disturbances in vain."

Enclosure 2 in the above letters pages 47 and 48 of the correspondence

A third order to the same effect followed on the 23rd October, commending the British merchants for having continued to trade, but observing that, as the ships and the merchants were numerous, it was absolutely necessary that a commercial man, "thoroughly acquainted with the great principles of dignity, should be appointed as "Taepan, and should come to Canton to direct and control the business."

Enclosure 1 in a letter from Mr. [illegible] dated [illegible] pages [illegible] correspondence.

Enclosure the above letter; page 56 of the correspondence.

The Emperor also issued an Imperial edict of a similar purport, which was published in Canton by the Governor on the 6th November. "The English barbarians," he said, "have an open market in the inner land, but there has hitherto been no inter- "change of official communications; it is, however, absolutely requisite that there "should be a person professing general control, to have special direction of affairs. "Let the said Governor immediately order the Hong merchants to command the said "separate merchants, that they send a letter back to their country, calling for the "appointment of another person as Taepan to come for the control and direction of "commercial affairs, in accordance with the old regulations."

Letter from Mr. Davis to Lord Palmerston, dated 18th Nov. 1834; pages 61 and 62 of the correspondence.

The British merchants in Canton replied to these orders on the 10th November that no authority as trading chief could be held by any person without the sanction of the British Government, which had already appointed officers to superintend and control its subjects at Canton.

The attempt made to induce the British merchants to appoint a Chief, who would keep his countrymen in order and enforce respect for Chinese regulations, was a remarkable negation of the right to control and govern foreigners residing in China; but it was, at any rate, consistent. Except in cases of homicide, the Chinese, as it has already been stated, had not attempted to exercise jurisdiction over the foreign residents in their country; and the orders issued by Governor Loo at the time of Lord Napier's arrival show that he, as well as his predecessor, Le, recognised fully the necessity for an English Chief. They wanted, however, a Chief whom they could treat as a servitor and an inferior; and Lord Napier's injudicious proceedings created a strong indisposition to have any dealings with a British officer.

Enclosure 2 in a letter from Mr. Davis to Lord Palmerston, dated 18th Nov. 1834; pages 66 and 67 of the correspondence.

The abolition of the Company's monopoly appears to have led at once to an increase of unlicensed trading by the Chinese; and on the 1st November 1834 the Governor of Canton and the Superintendent of Customs found it necessary to issue an edict, directing that any Chinese trader, other than a Hong merchant, entering the factories of the foreigners, either to buy or to sell goods, should be punished as a traitor; and that shopmen, trading on their own account in the name and with the connivance of Hong merchants, should be held responsible, equally with the merchants, for the Government Custom duties.

Enclosure 2 in a letter from Mr. Davis to Lord Palmerson, dated 2nd Jan. 1835; pages 77 and 78 of the correspondence.

On the 3rd November 1834, an Imperial edict against opium was received at Canton. Opium brought to China, it was said, was principally disposed of by the foreigners in the "outer seas;" and the Governor and his colleagues were accordingly ordered to send a naval force and drive away all opium ships, remaining outside the port after the conclusion of the trading season, and to station cruisers among the foreign ships, and at suitable places along the coast, to seize native vessels and boats engaged in the traffic. Chinese smuggling opium, or opening "opium furnaces," were to be arrested, tried, and punished with severity, and Custom House officials were to receive rewards for successful seizures. The Governor also was directed to issue orders to the English through the Hong merchants to the effect that if any English ship was found smuggling and evading payment of the Government duties, all vessels belonging to persons of that nation would be prevented from trading.

Letter from Mr. Davis to Lord Palmerston, dated 2nd Jan. 1835; page 76 of the correspondence.

"It is almost needless to observe," wrote Mr. Davis to Lord Palmerston in reference to this edict, "that previous documents of this nature have proved entirely nugatory, and "that the opium trade at last (*sic*) has continued in spite of them. It remains now to be "seen whether the Native Government, having its attention at length awakened to "the increased amount of smuggling transactions, consequent on the open trade of "this season, will endeavour to give greater efficacy to its edicts, and oppose some "effectual impediment to the contraband commerce of Lintin."

Enclosure 1 in the letter from Mr. Davis to Lord Palmerston, dated 2nd Jan. 1835; page 77 of the correspondence.

Another edict was issued by the Imperial Government about this time, directing the Governor and his colleagues to inquire whether foreigners were subjected to undue exactions by the Hong merchants at Canton, and to punish severely any persons convicted of extortion, as it was possible that Lord Napier's contumacious violation of the laws, and the entry of the frigates into the inner river, were the result of discontent arising from the rapacity of the merchants.

Letter from Mr. Davis to Lord Palmerston, dated 2nd Jan. 1834; page 76 of the correspondence. Edict of the Governor of Canton and Superintendent

Mr. Davis considered that this edict was inspired by a feeling of uneasiness, and apprehension of further trouble, arising from the recent occurrences, rather than by any spontaneous desire to do justice to the foreigners; but the motives, which dictated it, can only be surmised. Whatever may have been the real cause, no inclination appears to have been evinced at Canton to treat foreigners with greater civility; and

the customary annual proclamation was issued on the 15th November 1834, directing the Hong merchants to repress the pride and profligacy of the barbarians, and to abstain from gratifying their libidinous dispositions; and prohibiting the employment by foreigners of Chinese as servants and attendants.

of Customs, dated 15th Nov 1834 in Records of Proceedings of the Superintendents, dated 6th Dec. 1834; page 73 of the correspondence.

Mr. Davis during his term of office as Chief Superintendent made no effort to open communication with the officers of the Provincial Government. An adjustment of the dispute should, he thought, take place as "the result of mutual necessity"; and he was not prepared to accept a position of subordination to the Hong merchants, and to abandon the claim, which had been put forward by Lord Napier, for the establishment of direct official intercourse. He did not, therefore, favour an unconditional submission; and the failure of the attempt made by the Company's servants in 1829–30 to coerce the Chinese, by suspending the trade, made him unwilling to try the effect of that measure again.

Letters from Mr. Davis to Lord Palmerston, dated 11th Nov. 1834 and 19th Jan. 1835; pages 52 and 53 and 78–80 of the correspondence.

British subjects were accordingly advised to avoid giving any ground of complaint, and to refrain, as much as possible, from allusions to the past or anticipations of the future, so as to impress the Chinese with a sense of their reliance in the ability of the British Government to settle the difficulty in a satisfactory manner, but with this admonition they were left to manage their own affairs; and the Superintendents remained at Macao, and waited for instructions from England.

Notice to British subjects in China, dated 10th Nov. 1834; pages 56–58 of the correspondence.

The British merchants at Canton were, as usual, in favour of the adoption of strong measures. On the 9th December 1834 a petition, signed by Messrs. Jardine, Matheson, Innes, and others (in all 64 persons), was submitted to His Majesty the King in Council, praying him to take measures to maintain the honour of Great Britain, and preserve the advantages which a safe and uninterrupted commerce with China was calculated to yield. "Your petitioners," it was said, "beg leave most earnestly to submit their "thorough conviction, founded on the invariable tenor of the whole history of foreign "intercourse with China, as well as of its policy on occasions of internal commotion, "down to the present moment, that the most unsafe of all courses that can be followed "in treating with the Chinese Government or any of its functionaries, is that of quiet "submission to insult, or such unresisting endurance of contemptuous or wrongful "treatment, as may compromise the honour, or bring into question the power, of our "country."

Petition of British subjects at Canton to his Majesty the King in Council, dated 9th Dec. 1834; pages 68–71 of the correspondence.

They proposed, therefore, that a Minister Plenipotentiary should be sent to some convenient station on the east coast of China, with a sufficient maritime force, to demand reparation for the insults offered to Lord Napier, to His Majesty the King, and to the British flag, and compensation for the losses, which they had themselves sustained in consequence of the suspension of their trade, and to arrange for the promotion and extension of the British trade with China in the future; and suggested that such negotiations should not be assigned to any person previously connected in China "with "commerce conducted under the trammels and degradations to which it had been "subject."

The indirect attack upon the East India Company's servants then in the positions of Chief and Second Superintendent was perhaps partly personal, but was also doubtless inspired by the belief that an officer, sent direct from Great Britain, would be more likely to resent Chinese insolence and arrogance, than men who possessed practical experience of the conditions, upon which intercourse between the two countries had up to that time been conducted.

Mr. Davis resigned his appointment as Chief Superintendent and left China on 21st January 1835. He had, it appears, intended to leave China during the winter before his appointment as Superintendent of Trade; and under the conditions, which existed at the time of his departure, he considered that he could effect nothing by remaining at his post. A letter, which he wrote to the Governor-General of India in October 1834, contains a clear exposition of his views and policy. "At the same time," he wrote, "that the "local authorities have evinced their desire to continue the trade, it is my duty to state "that I have no expectation of any voluntary advances from them towards the recog-"nition of His Majesty's Commission. The government of foreigners through the "medium of the Hong merchants is a system too valuable to the Canton officers, in "diminishing their responsibility and enabling them to practise their heavy exactions "with impunity, to be readily abandoned by them; nor does there seem any chance "of bettering the condition of the English trade in this respect, unless His Majesty's "Government deem it expedient to adopt measures of coercion, in the event of the "previous, and more eligible, course of a reasonable appeal to Pekin, by the Yellow Sea.

Letter from Mr. Davis to Lord Palmerston, dated 19th Jan. 1835, and Records of Proceedings dated 19th, 21st, and 22nd Jan. 1835; pages 78–81 of the correspondence.

Letter from Mr. Davis to Lord William Bentinck dated 24th Oct. 1834; pages 45 and 46 of the correspondence.

"having been found to fail . . . . . Under these circumstances, and during "the uninterrupted progress of the trade, it is clear to me that the duty of this "Commission is to abstain from all uninvited approaches towards an intercourse with "the Government, and to observe a perfect silence pending the references home."

Letter from Mr. Davis to Lord Palmerston dated 11th Nov. 1834; pages 52 and 53 of the correspondence.

And again in a letter to Lord Palmerston, written in November 1834, regarding the Chinese edicts requiring the appointment of a commercial chief, he observed—"Being duly sensible of the inconveniences, that may attend the absence of a British "controlling authority from Canton, I will only repeat the expression of my assurance, "that this Commission will avail itself gladly of any favourable opening to commence "a negotiation with the Local Government. I must, however, state my conviction "that any adjustment ought to take place as the result of a mutual necessity; "and that an unbecoming and premature act of submission on our part, under present "circumstances, could not fail to prove a fruitless, if not a mischievous, measure."

He shared, as will be seen from the first quotation, the view held by so many of the East India Company's servants from the time of Mr. Flint, that more was to be obtained at Pekin than at Canton; and was of opinion that an appeal to the Emperor against the conduct of the Canton authorities should be tried, before any measures were taken to compel the Chinese Government to recognise the King's Commission, and place British commerce upon a more satisfactory footing. He did not, however, make any strong recommendation on the subject, and left the determination of the next move to His Majesty's Government; merely suggesting that the Imperial edict, which required the Governor of Canton to ascertain whether the discontent of the foreigners had been caused by the rapacity of the Hong merchants, offered a favourable opportunity for such an appeal. "An opportunity," he wrote to Lord Palmerston, on the 19th January 1835, "is afforded by this Imperial document, which His Majesty's "Government (should it be indisposed to accede to the Chinese proposition of a "'trading chief,') may not be inclined to neglect, in making an appeal to the Court of "Pekin, against the conduct of its servants at Canton, whose corrupt system, in "relation to the European commerce, tends nearly as much to defraud the Emperor of "his dues, as to oppress and discourage the foreign trader."

Letter from Mr. Davis to Lord Palmerston, dated 19th Jan. 1835; pages 78–80 of the correspondence.

Sir George Best Robinson succeeded Mr. Davis as Chief, and Mr. Astell was temporarily appointed as the Second, and Captain Elliot as the Third Superintendent.

A few days after this change in the direction of affairs, the second officer and some seamen (one European and ten natives of India and Manilla), belonging to the British trading ship "Argyle," were seized by the Chinese on the coast, about 40 miles from Canton, with the object of extorting money, and a ransom of 500 dollars was demanded.

Letter from Sir G. Robinson to Lord Palmerston, dated 3rd Feb. 1835; and Records of the Superintendent's Proceedings, dated 29th and 30th Jan. and 4th Feb. 1835; and Foreign Office memorandum of 1840; pages 31–86 of the correspondence.

The Captain of the ship complained to the Superintendents, and Sir G. Robinson sent Captain Elliot to Canton to present a letter to the Governor, representing the circumstances, and requesting that measures might be taken to obtain the liberty of the captives. The letter was signed by the three Superintendents, to give it a different character and appearance from Lord Napier's communications; and upon the outside of the envelope some words were written to show that it "related to matter concerning "human life."

Captain Elliot, accompanied by the Rev. C. Gutzlaff, and wearing his uniform as a Captain in the Royal Navy, took the letter to one of the gates of Canton on the 1st February, intending to present it to an officer of the Chinese Government. He was, however, assaulted as soon as he entered the city gate by a subordinate Chinese mandarin, and was thrown to the ground and treated generally with much indignity. Notwithstanding this reception, he persevered in his attempt to deliver the letter to an officer, and refused to hold any communication with some linguists, who appeared and wished to converse with him. Eventually he and Mr. Gutzlaff were admitted to the presence of two general officers, who had, as they were told, been specially deputed by the Governor to meet them. The officers were seated, and Captain Elliot tried to take a seat, but they immediately rose and received him standing. He then respectfully presented the letter to one of them, but he refused to receive it. Mr. Gutzlaff explained in Chinese that Captain Elliot was a British officer, and had come to make a representation in a matter that concerned the lives of British subjects, but the officer replied that they only received petitions. Mr. Gutzlaff showed him the superscription on the envelope, which he read; and they then left abruptly, repeating that they only received petitions.

The object of the representation was, however, attained, though the letter was not received; and the men who had been seized were released, and rejoined their ship at Canton on the 18th February.

Lord Napier's despatches to Lord Palmerston from the 9th to the 21st August 1834, were received at the Foreign Office in England upon the 31st January 1835; and the Duke of Wellington, who was then Foreign Secretary, wrote at once, on the 2nd February, to Lord Napier earnestly recommending to his attention the instructions communicated by Lord Palmerston for the guidance of the Superintendents, more particularly the 18th and 19th Articles of the general Instructions under the Royal Sign Manual. "It is not," he said, "by force and violence that His Majesty intends "to establish a commercial intercourse between his subjects and China; but by the "other conciliatory measures so strongly inculcated in all the instructions which you "have received."

Letter from the Duke of Wellington to Lord Napier, dated 2nd Feb. 1835; page 20 of the correspondence.

The other letters and proceedings of the Superintendents, from the 21st August to the end of October 1834, reached the Foreign Office shortly after; and, on the 24th March 1835, the Duke recorded his view of the position in a memorandum. "It is quite obvious," he wrote, "that the attempt made to force upon the Chinese "authorities at Canton an unaccustomed mode of communication with an authority, "with whose powers and of whose nature they had no knowledge, which commenced "its proceedings by an assumption of power hitherto unadmitted, had completely "failed; and as it is obvious that such an attempt must invariably fail, and lead "again to national disgrace; and as it appears that, as soon as Lord Napier had "withdrawn from Canton to Macao, the trade had been opened, that pilots had been "allowed to take British ships up the river to Whampoa, and that the trade was as "flourishing as ever, when the accounts came away; it appears that the time is come "when the Cabinet may take into consideration the means of managing and regulating "this affair in future."

Memorandum by the Duke of Wellington, date 24th March 1835 pages 51 and 52 the correspondence.

He recommended therefore—

(1.) That the Chief Superintendent in charge of the trade should not go to Canton without the permission of the Chinese.

(2.) That he should "not depart from the accustomed mode of communication."

(3.) That he should be a man of naval, military, or official rank and reputation, whose firmness and discretion could be relied on; and should have "great "powers to enable him to control and keep in order the King's subjects."

(4.) That there should be one Chief and one Second Superintendent, who should be a member of the legal profession, and should be appointed to hold the Criminal and Admiralty Court which had been established; and that the office of Third Superintendent should be abolished and some other retrenchments made in the cost of the Commission as originally constituted.

(5.) That the instructions under the Royal Sign Manual, which required the Superintendents to proceed to and reside at Canton, should be altered, and that alterations should also be made upon some other points, which, however, were not specified.

"It will be," the Duke concluded, "in the power of Government hereafter to decide "whether any effort shall be made at Pekin, or elsewhere, to improve our relations "with China, commercial as well as political. That, which we now require, is not to "lose the enjoyment of what we have now got.

"I would recommend that till the trade has taken its regular peaceable course, "particularly considering what has passed recently, there should always be within the "Consul General's reach, a stout frigate and a smaller vessel of war."

The Ministry, in which the Duke of Wellington was Foreign Secretary, only held office for four months, and upon the return of the Liberals to power, Lord Palmerston resumed his appointment at the Foreign Office. Lord Palmerston was not inclined to accept the Duke's view that the Chief Superintendent should be ordered to communicate with the Chinese authorities through the Hong merchants, and as there was no desire either on the part of the Ministry or of the nation to take measures to coerce the Chinese, the Superintendents were for some months practically left to themselves to discover a way out of the difficulty.

This Sir G. Robinson made no attempt to do; and during the period that he held office, from the 19th January 1835 to the 14th December 1836, he had no communication with the authorities at Canton, except on the occasion of the "Argyle" incident, and adhered closely, as he stated in reply to the Duke of Wellington's letter to Lord Napier, dated 2nd February 1835, and in several letters addressed to Lord Palmerston, to the policy of observation adopted by Mr. Davis, with whom he concurred as to the inadvisability of taking any action that might lead to an interruption of the trade or produce further complications, until the Superintendents should be placed in possession of the views and intentions of His Majesty's Government.

Letters from Sir G. Robinson to the Duke of Wellington, dated 26th, July 1835; page 109; and to Lord Palmerston, dated 13th April 16th Oct., 11th Nov., and 10th Dec. 1835, and 16th and 29th Jan., 8th and 27th Feb., 18th April, 10th May, and 28th Nov. 1836.

pages 94, 95, 100, 101, 106, 112, 118, 120, 124, 131, 133, and 135 of the correspondence.

His opinions and policy throughout this period will appear clearly from the following extracts from his official correspondence:—

Letter from Sir G. Robinson to Lord Palmerston, dated 16th Oct. 1835: pages 100 and 101 of the correspondence.

Writing to Lord Palmerston on the 16th October 1835, he observed:—"I trust your "Lordship will approve of the perfectly quiescent line of policy I have considered it "my duty to maintain under the present aspect of affairs. I have never in the "slightest degree perceived a disposition on the part of the Chinese authorities to "enter into communication, or even permit an intercourse, with the officers of this "Commission. On the contrary, I am convinced any premature and ill-timed attempt "to that effect would end in repulse and disappointment, and, as in the instance of "Captain Elliot's visit to the city gate in January last,* involve additional contumely "and insult, thereby greatly impeding the prospective adjustment of existing "difficulties, as well as creating new and vexatious interruptions to the present quiet "and prosperous routine of the trade, for no other object than the possible attainment "of very theoretical, if not questionable, advantages."

Letter from Sir G. Robinson to Lord Palmerston, dated 27th Feb. 1836: page 121 of the correspondence.

Again, in another letter dated 27th February 1836, he wrote:—"On the subject of "attempting to communicate with the local authorities through the medium of the "Hong merchants, it is scarcely necessary for me to comment. The very act of such "intercourse with them will ever preclude the possibility of our coming into more "intimate contact from the mandarins. But it is no communication, inasmuch as "they will ever decline to deliver even our petitions on all occasions relating to the "extortions, exactions, oppressions, and corruption of their own body, against whose "power and monopoly we have principally to exclaim, and for the annihilation of "which our strongest efforts ought to be exerted.

"From a people so arrogant and barbarous, nothing is gained by undue humiliation "and self-abasement. They are generally disposed to respect us, in proportion as we "respect ourselves. Under existing circumstances, the less we have to do with the "Chinese authorities, the more probable it is we shall avoid difficulties and dangers, "by which not only our present tranquility may be endangered, but our future "arrangements affected."

Letters from Sir G. Robinson to Lord Palmerston, dated 19th May 1836: page 133 of the correspondence.

And on the 10th May 1836, he commented as follows upon a communication addressed by the Hong merchants to him and to the chiefs of all foreign nations at Canton, requesting them to restrain trading ships arriving at Canton from resorting to other places on the coast: "My object in addressing your Lordship on this subject is "simply to prove that I am not, by any means, in communication with the Hong mer-"chants, nor have I in any way deviated from that line of policy so well suited to maintain "our present position, which is all I aspire to do, until I have the honour to receive "positive and definite instructions."

Although, however, the British Superintendents were systematically ignored by the Chinese authorities during Sir G. Robinson's tenure of office, and the Superintendents, except, perhaps, on the occasion of the "Argyle" incident, made no attempt to obtain formal recognition, some events, of much importance, occurred during the period.

Edict from the Superintendent of Customs to the Hong merchants, dated 8th March 1835, with annexed copy of a Memorial from the Local Government at Canton to the Emperor, proposing revised Trade Regulations pages 88 to 94 of the correspondence.

The altered conditions of the trade and the increase of smuggling and illicit trading, particularly in what the Chinese called the "outer seas," led to further revision of the Foreign Trade Regulations in March 1835, and the Governors of the seaboard provinces of China were requested by the Governor of Canton to issue orders requiring trading vessels proceeding to Canton from places within their jurisdiction for the purchase of foreign goods, to obtain stamped manifests from the Canton Custom House covering all goods purchased, and to treat as contraband all foreign goods, found within their jurisdiction, that were not so protected.

The revised regulations, eight in number, are summarised below:—

(1.) Foreign ships of war were, as before, prohibited from entering the inner river and port of Canton, and the naval force was made responsible for keeping them out. The trade of the nation, to which any ship of war entering the inner river might belong, was to be at once stopped.

(2.) Foreigners were again prohibited from bringing arms, foreign women, and seamen to Canton, and the Hong merchants and officers of the guard stations were made responsible for preventing any transgression of the order.

(3.) Pilots and compradores (purveyors) of foreign ships were all to be licensed by the Tungche of Macao, and were made responsible for preventing and reporting illicit practices. "Of late," it was stated, "there has constantly been a

* In connexion with the seizure of the officer and boat's crew of the "Argyle."

" set of vagabonds in the outer seas, falsely acting in the capacity of pilots, " who artfully make away with the goods of barbarians and then run off. " There has also been a class of vagabonds, who craftily assume the name of " compradores, and unlawfully combine for the purpose of smuggling and " other illegalities."

(4.) Each barbarian factory was allowed to employ two gate keepers and four water carriers, and each merchant was permitted to hire one man to keep his goods. These men were to be hired by the purveyors; the purveyors, in their turn, were to be appointed by the linguists; and the linguists by the Hong merchants; this "shutting up regulation" having been designed to prevent unlawful and traitorous combinations between foreigners and natives.

The employment of natives as menial servants was once more declared to be "eternally prohibited."

(5.) The employment by foreigners travelling between Canton and Macao of covered, flag-bearing sampan boats, which the Company's captains had been permitted to use, was prohibited, as these boats offered facilities for the transport of arms and contraband goods. The orders* permitting foreigners to only leave the Canton factories and take exercise in the place appointed for the purpose, on three days in each month, which admittedly had been continually disobeyed in recent years, were to be strictly enforced; the number of persons in a party was not to exceed 10; and the Hong merchants and the linguists were to receive punishment, if the orders were disregarded.

(6.) Foreigners were to submit petitions through the medium of the Hong merchants, in order that the dignity of Government might be rendered impressive; but petitions against the merchants, which they had refused to present, might be submitted direct at the offices of the local magistrates.

(7.) The security system was to be further developed by the appointment, for each trading ship, of a Hong merchant as surety by rotation, to act as an informer upon the other Hong merchant, who might be engaged as surety by the foreign trader for the sale of goods, payment of duties, and the transaction of public business.

(8.) The naval force was to be responsible for preventing the clandestine sale of goods, chargeable with duty, in the "outer seas." "The barbarian vessels," it was stated, "continually cast anchor in the outer seas, and delay entering " the port, and some even do not at all enter the port, but return and sail " away; not only storing up and selling opium, but also, it is feared, clan- " destinely disposing of foreign goods. We, your Majesty's Ministers, on " every occasion of this being reported to us, have immediately replied by " strict directions to the naval force, to urge and compel them to enter the " ports, or if they will not enter the port to drive them instantly away, and " not permit them to loiter about. We have also appointed officers at the " various maritime entrances, to seize with strictness smuggling vagabonds. " In repeated instances men and vessels going out to sea to sell opium have " been seized, and on investigation punishment has been inflicted. But the " province of Canton has a line of coast continuous along the provinces of " Fuhkien, Chekeang, Keangsoo, and Tientsin (Chihle). Traitorous vaga- " bonds of the several provinces sail in vessels of the sea upon the outer " ocean, and clandestinely buy and sell goods, dealing with the barbarians, " and then carry back (their purchases) by sea. This class of traitorous " dealers, neither entering nor leaving by any of the sea ports of Canton, " there are no means of guarding against or seizing them. And the foreign " goods having a divided consumption, the amount that enters the port is " gradually lessened, the consequences of which on the duties are great."

"I cannot say, however," wrote Sir G. Robinson to Lord Palmerston in reference to these regulations, "that the alterations or additions are framed in such a spirit, or " proceed to such an extent, as would render adherence to these eight rules at all more " compatible with the conduct of the trade, or our continuance in the country for one " month, than to the eight several times multiplied, already deposited in the Company's " archives. In fact, perhaps I need hardly observe to your Lordship, that the single " object of the republication of these instruments from time to time, is to enable the

Letter from Sir G. Robinson to Lord Palmerston dated 30th March 1835; page 87 of the correspondence.

* These orders were said to have been issued in the time of Governor Tseang in 1816 (the 21st year of Keaking).

" Local Government to evade responsibility, in every conceivable contingency which " may arise out of the foreign intercourse, by fixing the duty of a most minute " control upon other persons."

Letter from Captain Elliot to Rear-Admiral Sir T. B. Capel, dated 2nd Feb. 1837; page 189 of the correspondence; and "China Opened," (Vol. II., page 75), by the Rev. C. Gutzlaff.

A British ship, the "Troughton," engaged in the regular trade was attacked by pirates in the summer of 1835, almost within sight of the Macao Roads; the Captain and several of the crew were wounded in the conflict which ensued; the ship was plundered, and a sum of 70,000 dollarswas carried off. Some portion of the money appears to have been returned, but the perpertrators of the outrage were not brought to justice; and the case does not appear to have formed the subject of any communication from the Superintendents to the Canton authorities.

Letter from Sir G. Robinson to Lord Palmerston, dated 1st July 1835; pages 95–100; and from Lord Palmerston to Captain Elliot, dated 8th Nov. 1836; pages 127 and 128 of the correspondence.

A matter, in itself of little importance, though it had far-reaching consequences, engaged Sir G. Robinson's serious attention about this time. Messrs. Turner & Co., of Canton, claimed a sum of 300 dollars from Mr. Keating, being, as they alleged, the balance due on account of a cargo of rice, consigned to him, from Batavia. Mr. Keating refused to pay, because he had been obliged to pay this sum to the Hong security merchant over and above the legitimate port duties on the cargo. Turner & Co. urged that the Hong merchants' extortion was the result of his own action in leaving the rice in .the merchant's warehouses longer than was necessary, but this Mr. Keating denied. Turner & Co. applied to the Superintendents, and Sir G. Robinson, thinking that justice was on their side, and that it was absolutely necessary to maintain the reputation of the British trader in Canton for good faith, exerted himself to effect a settlement of the claim. Mr. Keating, persistently refused to admit any liability: denied the authority of the Superintendents to interfere, and even appealed to the Portuguese Governor against a supposed attempt on their part to exercise jurisdiction in Macao; and as no Court of Civil jurisdiction had been created, and the Superintendents had no means of compelling him to pay, Sir G. Robinson advanced the money to Turner & Co. on the public account, with the object of making him a debtor to the Crown.

This proceeding was subsequently disapproved by Lord Palmerston; and the Superintendents, though not made personally responsible for the advance, were cautioned against the adoption of such a course on any future occasion; and Mr. Keating was left to repay the sum advanced or not, as he might think proper. The Superintendents, however, were instructed to avail themselves of any suitable opportunity that might offer itself, to draw the attention of the Chinese authorities to the extortionate proceedings of the security merchant, and to endeavour to induce them to enforce strictly their own regulations.

Letter from Sir G. Robinson to Lord Palmerston, dated 20th Nov. 1835; pages 102–104; and letters from Lord Palmerston to Sir G. Robinson, dated 6th June, and to Captain Elliot dated 8th Nov. 1836; pages 111–112, and 126 of the correspondence. Also letter from Mr. Innes to Sir G. Robinson, dated 22nd Feb. 1836; page 124 of the correspondence.

Another remarkable instance of the lawlessness and contempt for the Chinese Government, which animated some of the British traders at Canton, occurred in the autumn of 1835. Mr. James Innes, the same gentleman, apparently, who had fired the house of the Superintendent of Customs in 1832, employed a native pilot to transfer some goods from a vessel, proceeding to Canton, to another vessel at Lintin, which was bound for Manilla. The pilot appears to have entered the Canton River with the goods, instead of proceeding to Lintin, and was seized by the Custom House officials, near the Bocca Tigris, for a real or supposed attempt at evasion of the Custom House regulations. Mr. Innes applied to the Governor for redress; and having experienced some delay in obtaining restitution of the property, he informed the Governor that he proposed to procure redress by acts of reprisal against the Chinese trade. He did, according to his own account, put a vessel in motion for the purpose; but eventually abstained from his contemplated hostilities, on receiving a pledge from Sir G. Robinson, that the case should be brought to the notice of His Majesty's Government,* and that the recovery of the property should be made the subject of a demand by the Superintendents upon the Chinese authorities, upon their "first formally coming into contact with them."

Sir G. Robinson, as promised, reported the circumstances to the British Government; commended highly Mr. Innes' forbearance and moderation in abandoning his intended measures of reprisal in consequence of his advice, and recommended that a strong remonstrance, accompanied with a demand for redress and compensation, should be submitted to convince the Chinese Government that outrages of the kind could not be committed with impunity, and to prevent British subjects from proceeding to "summary means for the protection and recovery of their property" in despair of obtaining redress by proper and reasonable representations.

* The Chinese Magistrate of Macao replied, it may be noticed, to a communication from Sir G. Robinson in regard to this case. The reply thus received was apparently the only official recognition Sir G. Robinson received throughout his term of office.

Lord Palmerston took a very different view of the case. He condemned strongly Mr. Innes' intended acts of reprisal, which, as he wrote, if carried into execution, would have rendered him liable to the penalties of piracy. "If Mr. Innes alone were concerned," he continued, "he might be left to abide by the consequences of his own "violence, but the proceedings, which he threatens to adopt, would expose to incon- "venience and danger the British subjects resident at Canton; and I have therefore "to instruct you to prevent Mr. Innes by all legal means, from executing his threats, "if his own sense of their impropriety should not have already induced him to "renounce them."

Letter from Lord Palmerston to Sir G. Robinson, dated 6th June 1836; pages 111 and 112 of the correspondence.

Sir G. Robinson, however, was instructed to avail himself of any suitable opportunity to press upon the Chinese authorities the restoration of the property in question, unless the authorities could show that the goods were liable to seizure in accordance with the Custom House regulations; though the claim was said to be by no means so clear as to warrant the Superintendents in making it a subject of demand upon their first formal meeting, or communication, with the authorities.

Further instructions on the case were communicated five months' later, after receipt of a report from the Law Officers of the Crown. Captain Elliot, to whom the letter was addressed, was directed to express to Mr. Innes, the conviction of His Majesty's Government, that he would abandon all intention of resorting to measures, which His Majesty's legal advisers had declared would amount to piracy, and to inform him that, if he should persist in carrying his intentions into execution, he would be abandoned by the British Government to the fate which such measures would probably bring upon him, and that the Commander of any King's ship, that might fall in with him, would be bound to treat him as a pirate.

Letter from Lord Palmerston to Captain Elliot, dated 8th Nov. 1836; page 126 of the correspondence.

In November 1835 Sir G. Robinson proceeded to Lintin, leaving the other members of the Commission at Macao, with the double object of saving the Commanders of British ships from the necessity of visiting Macao to obtain port clearances or to transact other business, and of endeavouring to check, by his presence, the occurrence of disorders and riots among the merchant shipping; and, on the 1st December, he proposed, in a letter to Lord Palmerston, that the jurisdiction of the Superintendents should be extended so as to include Lintin, or any other place, to which the Superintendents might think fit to resort, outside the Canton River. The establishment of the authority of the Commission at Lintin would, he thought, enable him to control and assist British subjects as effectually as if he were at Canton, and residence outside the river would be less likely to involve the Superintendents in disputes with the Chinese Government than residence in Canton itself; unless, indeed, they were there established with the right of direct official communication with the authorities, a result which, in his opinion, could only be achieved by force of arms.

Letters from Sir G. Robinson to Lord Palmerston, dated 24th Nov. and 1st and 10th Dec. 1835, and 29th Jan. 1836; pages 104–109 and 114–117 of the correspondence.

"Sincerely, anxiously, as I hope," he wrote, "that His Majesty's Government "may be pleased to take measures to notice and resent the contumely and insults "to which the late Lord Napier was subjected, so fatally terminating in his expulsion "with that of the whole of His Majesty's Commission from Canton, and in the lamented "death of that nobleman, I deem it an imperative duty to point out with the utmost "deference, that all the ends contemplated, as I am informed, by the establishment of "the King's Commission in China, may be amply and competently fulfilled by similar "powers, to those with which we are invested within the limits (as I conceive "they are erroneously termed) of the port, being extended to the Superintendents, "or other more judiciously styled authority without the river, or wherever they may "find it most convenient to resort."

Letter of 1st December 1835; page 105.

His Majesty's Government concurred with Sir G. Robinson as to the desirability of extending the limits of the jurisdiction possessed by the Superintendents, and Lord Palmerston instructed him to publicly notify the extension of thatjurisdiction so as to include Lintin and Macao.

Letter from Lord Palmerston to Sir G. Robinson, dated 28th May 1836; page 111 of the correspondence.

In December 1855 an officer of a British ship, the "Fairy Queen," was seized upon some pretext, and put in irons by certain subordinate Chinese officials, when on his way in a Chinese fast boat from Lintin to Canton; and a sum of 500 dollars was demanded as the condition of his release. The officer sent a Chinese with a letter to his ship requesting that the money might be paid. The Captain, upon Sir G. Robinson's advice, detained the Chinese messenger. The next day another messenger appeared, who demanded a reduced sum. The officer was clamorous for release, and the Captain was prepared to attempt a forcible rescue. He was, however, dissuaded by Sir G. Robinson; and the officer was eventually released.

Letter from Sir G. Robinson to Lord Palmerston dated 10th Dec. 1835; pages 108–109 of the correspondence.

A few days after this, one of the Hong merchants applied to Sir G. Robinson, as the "chief authority" of his country, for his assistance in the recovery of a sum of money

Letter from Sir G. Robinson to Lord Palmerston, dated 12th

which was owed to him by some Parsees; but it does not appear that the application was made with the knowledge or sanction of the Chinese authorities.

Jan. 1836 and enclosure: pages 110 and 111 of the correspondence.

The Chief Superintendent's influence with Mr. Innes and the Captain of the "Fairy Queen" certainly prevented measures which might easily have produced an immediate rupture with the Chinese; and the trading season of 1835–36 was said by Sir G. Robinson to have been one of the most successful ever remembered in China.

Letter from Sir G. Robinson to Lord Palmerston, dated 18th April 1836; page 131 of the correspondence.

Extract from a letter from Sir G. Robinson to Lord Palmerston, dated 5th Feb. 1836; pages 119 and 120 of the correspondence.

The opium trade, however, was coming more and more to the front; and Sir G. Robinson's remarks upon it are worthy of reproduction. "I see no grounds," he wrote, "to apprehend the occurrence of any fearful events on the north-east coast, nor can I "learn what new danger exists. I am assured from the best authority that the scuffles "between different parties of smugglers and mandarins, alike engaged and competing in "the traffic, are not more serious or frequent than in this province. In no case have "Europeans been engaged in any kind of conflict or affray, and while this increasing "and lucrative trade is in the hands of the parties, whose vital interests are so totally "dependent on its safety and continuance, and by whose prudence and integrity it has "been cherished and brought into its present increasing and flourishing condition, I "think little apprehension may be entertained of dangers emanating from imprudence on "their part. Should any unfortunate catastrophe take place, what would our "position at Canton entail upon us but responsibility and jeopardy, from which we are "now free? On the question of smuggling opium, I will not venture in this place, "though, indeed, smuggling carried on actually in the mandarin boats can hardly be "termed such. Whenever His Majesty's Government direct us to prevent British "vessels engaging in the traffic, we can enforce an order to that effect, but a more "certain method would be to prohibit the growth of the poppy and manufacture of "opium in British India."

It seems possible that Sir G. Robinson may have been influenced to some extent in his intention to leave Macao, and establish his headquarters at Lintin, by differences of opinion with his colleague, Captain Elliot, who was at this time Second Superintendent. Captain Elliot, it appears, did not agree with his Chief in his view of Mr. Innes' conduct, and was evidently anxious to arrive at an understanding with the Chinese, and to adopt for that purpose measures of conciliation and submission. "The peaceful "and conciliatory policy," he wrote to Lord Palmerston on the 25th January 1836, "by which the King's Government appear to me to desire to maintain and promote "the commercial intercourse with this Empire, is not very generally approved among "the 50 or 60 resident merchants at Canton, and a determination to give it effect, so "far as depends upon me, is the least popular task I could have proposed for myself."

Extract from a letter from Captain Elliot to Lord Palmerston, dated 25th Jan. 1836; page 136 of the correspondence

In pursuance of these views, he seems to have advocated, in 1835–36, an attempt to open communication with the Governor of Canton through the Hong merchants, as on the 22nd July 1836 Lord Palmerston communicated to him the following instructions upon the point:—"I have to observe to you that it does not appear to His Majesty's "Government, that it would be expedient that you should attempt to re-open commu- "nications with the Viceroy through the Hong merchants; but, on the contrary, it is "desirable that you should decline every proposition to revive official communications "through that channel, whatever may be the quarter from whence such propositions "may come. It might be very suitable for the servants of the East India Company, "themselves an association of merchants, to communicate with the authorities of China "through the merchants of the Hong; but the Superintendents are officers of the King, "and as such can properly communicate with none but officers of the Chinese Govern- "ment. This is a point upon which you should insist, and I have, therefore, to instruct "you, if any attempt should be made by the Hong merchants to enter into communication "with you upon matters of public business, to express your regret that you are not "at liberty to receive any such communications except from the Viceroy direct, or "through some responsible officer of the Chinese Government. I have to add that "His Majesty's Government do not deem it expedient that you should give to your "written communications with the Chinese Government the name of 'petitions.'"

Extract from a letter from Lord Palmerston to Captain Elliot, dated 22nd July 1836; page 123 of the correspondence.

Captain Elliot also, in a minute recorded in December 1835, recommended that the Captain of a steamboat, which had been objected to by the Chinese, should be enjoined on the King's authority not to proceed to Canton; and Lord Palmerston thought it necessary to instruct him to use great caution in interfering in such a manner with the undertakings of British merchants. "In the present state of our relations with China," he wrote, "it is especially incumbent upon you, while you do all that lies in your "power to avoid giving just cause of offence to the Chinese authorities, to be at the "same time very careful not to assume a greater degree of authority over British "subjects in China than that which you in reality possess."

Letter from Lord Palmerston to Captain Elliot, dated 22nd July 1836; pages 121–122 of the correspondence.

Another letter from Captain Elliot, written in March 1836, and received in the Foreign Office one day after the above despatch was written, shows clearly that he then differed from the views held by Lord Napier, Mr. Davis, and Sir G. Robinson as to the inexpediency of communicating with the Chinese authorities through the Hong merchants :—

Extract from a letter from Captain Elliot, to the Foreign Office, dated 14th March 1836; and received at the Foreign Office on the 23rd July 1836; pages 136 and 137 of the correspondence.

"It had long seemed to me," he wrote, "that the arrival of the new Viceroy at "Canton would furnish us an occasion for the re-opening of our communications with "the provincial authorities, by the only channel which, I am well persuaded, will ever "open out to us at once, without a very hazardous and a very needless struggle."

Sir G. Robinson, on the 29th January and 1st February 1836, remarked upon the evils of disunion and opposition, which appeared to inevitably result from the existence of a board of three or more persons, and expressed his opinion that affairs would be managed better by a single individual. He proposed, therefore, that the appointments of Second and Third Superintendents should be abolished, and that the Chief Superintendent should be made solely responsible for the supervision of the trade and the maintenance of order among British subjects. The headquarters of the Superintendent should, he thought, be established on board a merchant ship, and he should reside at any place, that might be found suitable, in the vicinity of the shipping, "out of the power and free from the restraints of the Chinese."

Letters from Sir G. Robinson to Lord Palmerston, dated 29th Jan. and 1st Feb. 1836; pages 114–119 of the correspondence.

The Chief Superintendent at Lintin was certainly in more direct contact with British ships and British seamen than he would have been at Macao, or even perhaps at Canton, under the conditions of the trade then existing. His residence, however, at the emporium of illicit trade was calculated to create an impression that this trade was fostered and encouraged by the British Government, and it is clear from remarks made by Sir G. Robinson, in his letter of the 29th January, that the measure was sharply criticised by some of the British merchants then in China. Lord Palmerston also was evidently doubtful as to its expediency, and informed the Chief Superintendent in a letter, written on the 7th June 1836, that although he was not prepared to disapprove of his temporary residence at Lintin, and was willing to take it for granted that the reasons, which had induced him to separate himself from his colleagues and carry on there the business of the Commission alone, had appeared to him to be sufficient. His Majesty's Government was unable to authorise the permanent establishment of the Commission at that place without further information.

Letter from Lord Palmerston to Sir G. Robinson, dated 7th June 1836; pages 113 and 114 of the correspondence.

Sir G. Robinson's views offered no prospect of an improvement in the unsatisfactory relations existing between the Commission and the Chinese Government; and the expense of the Commission was unnecessarily great. In the same letter, therefore, Lord Palmerston informed him that His Majesty's Government had decided to reduce the establishment in China, and to abolish the office and salary of Chief Superintendent, and that his functions would cease from the date of receipt of the letter. Such a measure, as he said, was called for by the necessity of practising economy in every branch of the public ervice, and was justified by the extent and nature of the business which the Commission had to transact.

Sir G. Robinson's letters of the 29th January and 1st February, which reached the Foreign Office a few days after the issue of these orders, produced no change in this decision, and Captain Elliot, on the 15th June 1836, was directed to consider himself as the Chief of the Commission.

Letters from Lord Palmerston to Sir G. Robinson and to Captain Elliot, dated 15th June 1836; page 119 of the correspondence.

Other reductions in the establishment were made shortly after. The appointment of Third Superintendent was abolished, and a new appointment of Deputy Superintendent on a reduced salary was created in its place, and the salaries of the Secretary, Chinese Secretary, and Surgeon were reduced.

Letter from Lord Palmerston to Captain Elliot dated 8th Nov. 1836; pages 130 and 131 of the correspondence.

The trade had continued without interruption after Lord Napier's unfortunate death, and His Majesty's Government had not thought it advisable to make any demonstration of naval force at Canton. The plunder, however, of the "Troughton," and the difficulty experienced by the Superintendents in controlling British seamen in the port, convinced Lord Palmerston that their authority must be supported, and the Naval Commander-in-Chief in the East Indies was requested, in the spring of 1836, to station a ship of war permanently in the China Seas, to act in concert with the Superintendents for the maintenance of British interests.

Letters from the Hon. W. Fox Strangways and from Lord Palmerston to Captain Elliot, dated 14th Sep. and 6th Dec. 1836; pages 123 and 132 of the correspondence.

The Superintendents also had difficulties with the Portuguese Governor of Macao, who declined, either to recognise their authority in that settlement, or to grant redress in cases of outrage by Portuguese upon British subjects. A representation was made on the subject to the Government of Portugal; and the British Admiral was instructed to call the special attention of the Commanders of ships of war on the China station to the necessity of watching over the interests of British subjects at Macao.

Letters from Captain Elliot to Lord Palmerston, dated 27th July 1836 and 2nd Feb. 1837; pages 137–138 and 153–156 of the correspondence.

The evils, which the Hong merchants had anticipated from the abolition of the East India Company's monopoly, were in the meantime fast developing. The demand for opium was strong and was met by increasing imports from both sides of India; and the trade was no longer confined to Canton, but had been extended to other sea-board provinces on the north-east coast of China. The value of the opium imported into China by British merchants in 1836 amounted, according to Captain Elliot, to nearly 18,000,000 dollars, being about 1,000,000 dollars in excess of the total value of the tea and silk exported by them during the year. The hope expressed by Mr. Buckingham in the House of Commons in 1833, and entertained doubtless by many others, that free trade with China would lead to an increasing demand in that country for British manufactures, had therefore proved delusive. The East India Company abstained from illicit trading, and had exported British manufactures to China, even on some occasions at a loss, to provide funds at Canton for their investment. Merchants, untrammelled like the Company by scruples on the score of illicit trading, brought to China the article of commerce for which there was the most demand, and that article was opium.

The missionaries, moreover, were not disposed to submit to the interdict, which had been placed upon the spread of Christianity in China; and a voyage* undertaken in 1835–36 by Messrs. Medhurst and Stevens for the purpose of distributing tracts in the Chinese language along the coast, appears to have attracted the serious attention of the Chinese Government. More than one Imperial edict was promulgated regarding the distribution of religious tracts, and the Government at Pekin had unquestionably strong objections to the creation of a bond of union between foreigners and the natives by the propagation of the Christian religion.

Enclosure, in the letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837; pages 156–161 of the correspondence

In or before June 1836, Heu Naetse, the Vice-President of the Chinese Sacrificial Court, submitted a remarkable memorial to the Emperor, urging that the more severe the interdicts against opium were made, the more widely did the evils, which arose therefrom, spread throughout the country, and recommending that a change should be made in the policy of Government. In the time of Kienlung and his predecessors, as he said, opium was admitted into Canton as medicine, subject to a tariff duty of five taels, four mace, and five candareens on each package of 100 catties. After this the import of the drug was prohibited, but in the first year of Keaking persons convicted of opium-smoking were subject only to the punishment of the pillory and the bamboo. The penalties had in course of time been increased, and opium-smokers were then (1836) liable on conviction to be punished with transportation in various degrees, and with death after the ordinary period of imprisonment. Notwithstanding this severity, opium-smokers had increased in number, and the habit had spread throughout almost the whole Empire.

"Formerly," he wrote, "the barbarian merchants brought foreign money to China, "which, being paid in exchange for goods, was a source of pecuniary advantage to the "people of all the seaboard provinces. But latterly the barbarian merchants have clan- "destinely sold opium for money, which has rendered it unnecessary for them to import "foreign silver. Thus, foreign money has been going out of the country, while none "comes into it." The export of silver had, he urged, caused a great appreciation in its value as compared with "cash," and this had disorganised the salt trade, as the merchants sold salt for "cash" and paid the Government duties in silver. It would not be right to stop the foreign trade because the English (*sic*) had traded in opium, and although the Celestial Empire would not hesitate to relinquish the revenue derived from it, the recent extension of clandestine trade to Fukhien and Keangnan, and even to Tientsin and Manchuria, showed that it would be impossible to prevent all foreign commerce. "Besides," as he said, "the hundreds of thousands of people living on the "sea-coast depend wholly on trade for their livelihood, and how are they to be disposed "of? Moreover, the barbarian ships, being on the high seas, can repair to any island "that may be selected as an entrepôt, and the native seagoing vessels can meet them "there, it is, then, impossible to cut off the trade."

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* An edict was issued by the Emperor in regard to this voyage, in which the successive misdemeanours of the English, viz., the construction of the quay and garden at Canton, bringing foreign women to that city, riding in sedan chairs, the presumptuous submission of petitions, the forcing of the passage of the Bocca Tigris in 1834, and finally "the distribution of foreign books calculated to seduce men with lies," were detailed and condemned; and the Governor of Canton was directed to "issue explicit orders to the English Chief and "others on the subject, and to remind them that their being allowed commercial intercourse at Canton is a "matter of extraordinary favour, but that if the foreigners continue to sail about in this disorderly manner, "they must immediately be driven out of port, and no longer allowed commercial intercourse." ("China: its State and Prospects, with especial reference to the spread of the Gospel," by the Rev. W. H. Medhurst.)

The distribution of tracts along the coast was, it may be observed, commenced by the Rev. C. Gutzlaff on the occasion of the voyage of the "Lord Amherst" in 1832.

The manner in which the opium trade was carried on, and the evils, which resulted from the attempts made to suppress it, were graphically described. "Here (at Lintin)," he wrote, "are constantly anchored seven or eight large ships in which the opium "is kept, and which are, therefore, called receiving-ships. At Canton there are "brokers of the drug, who are called melters. These pay the price of the drug into "the hands of the resident foreigners, who give them orders for the delivery of the "opium from the receiving-ships. There are carrying boats plying up and down the "river, and these are vulgarly called fast crabs and scrambling dragons. They are "well armed with guns and other weapons, and are manned with some scores of "desperadoes, who ply their oars as if they were wings to fly with. All the Custom-"houses and military posts, which they pass, are largely bribed. If they happen to "encounter any of the armed cruising boats, they are so audacious as to resist, and "slaughter and carnage ensue. . . . . The dread of the laws is not so great on "the part of the common people, as is the anxious desire of gain, which incites them to "all manner of crafty devices, so that sometimes indeed the law is rendered wholly "ineffective. There are also both on the rivers and at sea banditti, who, with pretence "of acting under the orders of Government, and of being sent to search after and "prevent the smuggling of opium, seek opportunities of plundering. When I was "lately placed in the service of your Majesty, as Acting Judicial Commissioner at "Canton, cases of this nature were very frequently reported."

As therefore, he argued, it was impossible to stop the foreign trade, and the prohibitive regulations had been wholly inoperative, the only practicable method was to permit the importation of opium upon payment of duty, as a medicine, and to require that after it had passed the Custom House, it should be delivered to the Hong merchants in exchange for merchandise, and that no money should be paid for it. Foreign money should be placed on the same footing as sycee silver, and the export of it should be equally prohibited.

Heu Naetse had evidently no sympathy with opium-smoking, which he described as a vile practice. "Opium," he said, "was originally ranked among medicines; its "qualities are stimulant; it also checks excessive secretions, and prevents the evil "effects of noxious vapours. When anyone is long accustomed to inhaling it, it "becomes necessary to resort to it at regular intervals, and the habit of using it, "being inveterate, is destructive of time, injurious to property, and yet dear to one "even as life. Of those who use it to great excess, the breath becomes feeble, the body "wasted, the face sallow, the teeth black; the individuals themselves clearly see the "evil effects of it, yet cannot refrain from it." Smokers of opium were, however, in his opinion, unworthy of consideration, and the waste that was going on "in the resources, "in the very substance of China," was a far more important consideration. He recommended therefore that in future no restriction should be placed upon the purchase and use of opium by the people generally, but that to show the Government condemnation of the habit, and to maintain an appearance of consistency, all civil and military officers, soldiers, and scholars should be prohibited from using the drug, and that any of them, who might be found smoking, should at once be dismissed from service.

On receipt of this memorial, Tang, who had succeeded Loo as Governor of Canton during the spring of 1836, and his colleagues were directed by the Emperor to consider the question and report.

Imperial Edict, dated 12th June 1836, page 161 of the correspondence.

The Commissioners of Finance and Justice and the Superintendent of Customs were consulted, and on the 7th September 1836 the Governor and Deputy Governor reported in favour of Heu Naetse's proposals. "We, your Majesty's Ministers," they wrote, "having examined the original memorial, and considered the details therein contained "respecting the evils to be removed, regard the whole as true and accurate. The "request for a repeal of the prohibitions and change in the system, and a return to "the former plan of laying a duty on opium, is also such as the circumstances of the "times render necessary, and it is our duty to solicit your Majesty's sanction thereof. "In case of such sanction, any foreigner, who in the course of trade may bring opium, "must be permitted to import and pass it at the custom-house, paying the duty on it "as fixed by the maritime tariff of Kienlung (viz., 3 taels, 3 mace, 8 candareens and "6 cash per 100 catties), and must deliver it to the Hong merchants in the same "manner as long-ells, camlets, and other goods, bartered for native commodities, but "on no account may he sell it clandestinely for money. If this plan be faithfully and "vigorously carried into effect, the tens of millions of precious money which now "annually go out of the Empire will be saved, the source of the stream will be "purified, and the stream itself may be eventually stayed."

Enclosures 3, 4, and 8 in the letter from Captain Elliot above quoted; pages 161–168 and 178–181 of the correspondence.

They submitted, therefore, for approval nine regulations, which they had framed to give effect to the proposals; the consideration as they said, "of the very first conse-"quence," being, "that effectual measures should be taken to prevent the exportation "of sycee silver." All opium imported was to be paid for in merchandise, as the object in repealing the prohibition against its importation was to "prevent the loss of "specie occasioned by the sale of the drug for money," and the Hong merchants were to be held responsible that no sycee silver was exported. The export of foreign money in limited quantities (viz., three-tenths of any surplus there might be in the value of the goods imported into China in any ship over the value of the return cargo, subject to a maximum of 50,000 dollars for each ship) was to be allowed, in accordance with the practice then existing, which had its origin in orders issued by Governor Yuen in 1818; foreign money, before that date, having, as they said, been exported without any limit or restriction.

The prohibition of the cultivation of the poppy in China should also, they recommended, be relaxed, as there was no better plan of checking the importation of opium by foreigners than to "sanction the cultivation and preparation of it in the Empire." The smoking extract of opium prepared in China was said to possess milder properties and to be less injurious, though not less soothing, than the imported drug.

The Governor and Deputy Governor, as it has been already noticed, fixed the date of the first Imperial interdict against opium in the fourth year of Keaking, 1799 A.D. "Opium," they said, "is an article brought into the Central Empire from the lands of "the far-distant barbarians, and has been imported during a long course of years. In "the reigns of Yungching and Keenlung it was included in the tariff of maritime "duties under the head of medicinal drugs, and there was then no regulation against "purchasing it or inhaling it. But in the fourth reign of Keaking (1799 A.D.) the "then Governor of this province Keihking, of the Imperial kindred, regarding it as "a subject of deep regret that the vile dirt of foreign countries should be received "in exchange for the commodities and the money of the Empire, and fearing lest the "practice of smoking opium should spread among all the people of the inner land to "the waste of their time and the destruction of their property, presented a memorial "requesting that the sale of the drug should be prohibited, and that offenders should "be made amenable to punishment. This punishment has been gradually increased "to transportation and death by strangling."

Enclosures 5 and 6 in the letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837; pages 168–178 of the correspondence.

A radical change of policy of this nature had, however, its opponents; and memorials against the proposed legislation of the opium trade were submitted in October 1836 by Choo Tsun, a member of the Inner Council, and by Heu Kew, a sub-censor over the Military Department.

Choo Tsun argued that effectual prohibition of the importation of opium was possible, and that a law, which was not entirely effectual, should not on that account be abolished. "The laws," he said, "that forbid the people to do wrong, may be likened "to the dykes, which prevent the overflowing of water. If anyone then, urging that "the dykes are very old, and therefore useless, should have them thrown down, what "words could express the consequences of the impetuous rush and all-destroying "overflow!"

If, he continued, it were possible to prevent the exportation of foreign money by permitting trade by barter only, why should it not be equally possible to prevent the importation of opium; and if this were prevented the exportation of dollars would cease of itself. Increased cultivation of the poppy in China would interfere with the supply of food grains, and would not check the trade in foreign opium, as people naturally prized things that were foreign and strange, and undervalued those that were in ordinary use. The production of opium in Yunnan was even then, as he could say from personal experience, not less than several thousand chests, but the exportation of silver had not in consequence diminished, and the lack of the metal in that province was greater than before.

It would, he argued with much force, be impossible to permit the common people to sell and smoke opium, and prevent the officers and soldiers and the literati from acquiring the habit; and an extension of the use of opium among the soldiery would, he urged, render them effete and worthless, and the result would be the ruin of the Empire. The injury caused to the people by opium was indeed his main argument. "To sum up the matter," he said, "the wide spreading and baneful influence of "opium, when regarded simply as injurious to property is of inferior importance, but "when regarded as hurtful to the people, it demands most anxious consideration, for "in the people lies the very foundation of the Empire. Property, it is true, is that "on which the subsistence of the people depends. Yet a deficiency of it may be

" supplied, and an impoverished people improved, whereas it is beyond the power of " any artificial means to save a people enervated by luxury." The conquest of Batavia by the Dutch was, he added, explained by a historian of Formosa to be due to the enervation of the people resulting from the use of opium; and he ascribed to the English the design of weakening and enfeebling the Chinese by the introduction of the drug. He quoted also a remark by Kanghi, in 1717 A.D., to the effect that there was "cause for apprehension, lest in centuries or milleniums to come, China *should* " be endangered by collision with the various nations of the West"; referred admiringly to the policy of Keaking, as laid down in 1818, of coercing the barbarians with firmness and vigour in the event of their refusing to comply with the regulations and assuming an attitude of opposition and rebellion; and concluded by recommending the Emperor to maintain the prohibition, and to order the Governors and Deputy Governors of all provinces to redouble their efforts for its enforcement.

The account, given by Choo Tsun, of the manner in which, and the time when, the use of opium was first prohibited in China, does not, it may be observed, differ materially from the statements made on the subject by Heu Naetse and the officers of the Canton Government. "And in regard to opium," he said, "special enactments were " passed for the prohibition of its use in the first year of Keaking (1796)"; and since then memorials, presented at various successive periods, have given rise to additional prohibitions, all which have been inserted in the code and the several tariffs.

Heu Kew's memorial foreshadowed the policy eventually adopted. He admitted that silver had risen largely in value, and agreed with Heu Naetse that this result had been caused by its clandestine exportation, principally in payment for opium. "The amount " annually lost to the country," he said, "is about ten and some odd millions of money. " The money thus lost was at first the foreign money, wherewith foreigners had previously " purchased goods: now it is entirely the fine silver of the inner land, cast into a different " form at Macao. Formerly the foreigners imported money to purchase the merchandise " of the country; but now it has all been carried back. . . . . It is since the " suppression of the pirates in the reign of Keaking (1810 A.D.) that opium has gradually " blazed up into notice. At first the annual sale of it did not exceed in value a few " millions, but of late it has risen to nearly 20 millions; and the increase and accumulation " of the amount from day to day and from month to month is more than can be told." He was, however, opposed equally to the proposals, which had apparently been made by some persons, for the suspension of all foreign commerce, and to Heu Naetse's scheme for the legalisation of the opium trade. Considering the length of time that the foreign commerce had been carried on, its sudden interruption would, he thought, be an undignified and impolitic measure; while the legalisation of the opium trade would lead to an increase in the amount of opium imported, and to a corresponding increase in the clandestine exportation of silver, and would, moreover, be wholly incompatible with the "uninjured dignity" of the Celestial Empire. The importation of opium and the exportation of sycee silver were, he argued, both rightly interdicted, and an effectual prohibition of the import of opium was practicable under an energetic administration. The foreigners were, no doubt, presumptuous and violent, as they had shown by riding in sedan chairs, by consorting with Chinese prostitutes, by their actually levelling Chinese graves to make a road at Macao, and by their lawless trading on the high seas in evasion of the port duties; but they had never "failed to succumb" when they had been met with a firm front, as on the occasions of Lord Napier's arrival at Canton, and the destruction of the quay at the East India Company's factory in 1831. He recommended therefore that the Chinese should first be "awed and purified" by the severe punishment of the Natives selling opium by retail, of the Hong merchants who arranged the transactions, of the wholesale brokers, of the boatmen who conveyed the drug from the receiving-ships, and of the naval officers who had connived at the illicit trade; and that attention should then be directed to the foreigners.

Of the foreigners at Canton he named nine, five Englishmen (Mr. Jardine, who, as he said, was nick-named "the iron-headed old rat," and Messrs. Innes, Dent, Turner, and Whiteman), one American, and three Parsees, who were supposed to be notorious opium dealers, and proposed that these men should be arrested and compelled to cause all the receiving-ships anchored at Lintin to leave, and to write a letter to the King of their country (*sic*), to inform him that the Chinese Government had determined to stop the importation of opium, and that they would be released and permitted to continue their trade, if the opium ships ceased from resorting to China, but that if the ships again brought opium, all trade would be stopped, and they (the writers) would be executed. "If," he concluded, "a talented, intelligent, and determined officer " were, in the first place, to punish severely the Chinese traders, we may hope that he " would thus be able at once to overwhelm the spirit of the barbarians."

Enclosure 7 in the letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837; page 178 of the correspondence.

The Emperor, on receipt of these memorials, directed further consideration of the subject, and Governor Tang and his colleagues were ordered to consult together upon the recommendation to punish severely all Chinese, who had introduced and sold opium, or in any way connived at it; and "having determined on the steps to be taken in order "to stop up the source of the evil," to present a true and faithful report.

Letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837; pages 153-156; and Imperial edict, enclosed in a letter from Captain Elliot to Lord Palmerston, dated 21st Feb. 1837; page 191 of the correspondence.

The reply sent by the Local Government at Canton to this edict is not on record, but the Governor and his colleagues appear to have proposed that the policy of prohibition should receive a further trial.

On the 28th October 1836, also, they caused inquiries to be made regarding the nationality of the nine merchants named by Heu Kew, and the nature of their connexion with the opium trade; and, on the 23rd November 1836, they ordered the merchants in question (eight of whom were British subjects) to settle their affairs and leave Canton within a fortnight. The time allowed for their departure was, however, extended by a second order to the end of February 1837, and the question was subsequently dropped, and no attempt was made to enforce the edict of expulsion.* Strong measures, however, were taken against the native smugglers, which were attended with considerable success, and caused a decided check to the opium deliveries.

Letters from Captain Elliot to Lord Palmerston, dated 7th Feb. 1837, and enclosures; pages 181-187; and letter from Captain Elliot to Lord Palmerston dated 2nd Feb. 1837; pages 153-156 of the correspondence.

On the 26th January 1837, the Emperor issued the following orders upon the final proposals of the Canton Government in regard to the importation of opium, and the exportation of silver: "A report has this day arrived from Tang and his colleagues "presenting the result of their mutual deliberations, directed to remove the baneful "effects that arise from opium having pervaded the country. By the prevalence of "opium throughout the Empire, there has been occasioned a daily decrease of our fine "silver; being now desirous to exert ourselves entirely to stop up the source of this "evil, the only sure mode of proceeding is utterly to prohibit the exportation of sycee "silver. If, by diligent and assiduous watchfulness in the places from whence the "silver is exported, and at those points by which it necessarily must pass, we can "deprive both the traitorous natives and the barbarians of all opportunity of exer- "cising their artful devices, it is clear that we may thus gradually close up the breach "and prevent further exportation.

Enclosure (1) in a letter from Captain Elliot to Lord Palmerston, dated 21st Feb. 1837; page 191 of the correspondence.

"The said Governor and his colleagues have been able to perceive this, and point it "out in their memorial. Let them join heart and hand to enforce vigilant and "faithful observation, to punish all traitorous Natives who combine with the foreigners "in illegality, and entirely to hinder foreign merchants for gratifying their avaricious "greediness, and let it be their grand object wholly to prevent the exportation of our "fine silver."

The dispute between Mr. Keating and Turner & Co., in 1835, showed the necessity for the establishment at Canton of a Court of Civil jurisdiction, in addition to the Court of Criminal and Admiralty jurisdiction, which had been created in 1833; and a consideration of the reports submitted by the Superintendents in regard to the case, and in regard also to the case of Mr. Innes, brought to light the fact that the Order in Council of 1833, regarding the powers and authority of the Superintendents over British subjects, was based upon a misunderstanding, and that the Superintendents had really, with the exception perhaps of the judicial powers conferred by the creation of the Criminal and Admiralty Court, no authority whatever.

The Order in Council invested the Superintendents with the powers and authorities for the control of the trade of China and His Majesty's subjects in China, that were possessed by the supracargoes of the East India Company, save in so far as these were repealed or abrogated by the Act of 3 & 4 Will. IV. c. 93, to regulate the trade to China and India.

Acts 33 Geo. 3. c. 52. and 53, Geo. 3. c. 155; and letter from Sir G. Robinson to Lord Palmerston, dated 1st July 1835; pages 95-100 of the correspondence.

The shipping which resorted to China from Great Britain, during the continuance of the East India Company's monopoly, was under the complete control of the supracargoes, as the ships either belonged to the Company, or were chartered by it. The ships from India also were furnished with licenses by the Governments in that country, which were withdrawn at pleasure by those Governments, or in cases of emergency by the Select Committee of the supracargoes. The supracargoes had the power to arrest and deport from China any British subject, who was there without a license from the Company, and in the case even of licensed persons they were able to suspend the license, and inform the Chinese authorities, that they would not interfere for the adjustment of any debts such persons might contract subsequently to the date of the

* Captain Elliot, it may be observed, in a letter to Lord Palmerston, dated 7th February 1837, said that he should feel bound to interpose in the event of the Provincial Government attempting seriously to expel the gentlemen in question from China. "And," he wrote, "your Lordship may rely on my measured, but firmest, "opposition to an intolerably injurious aggression of this practical nature." (Page 182 of the Correspondence.)

notice. In disputes between private traders in China the supracargoes had not been accustomed to interfere.

The Act to regulate the trade to China and India, which abolished the Company's monopoly extinguished the necessity for any license either to trade with, or to reside in, China; and the power to prevent any ship, belonging to a British subject, from trading with China, or to expel from China any British subject, consequently lapsed.

Letters from Lord Palmerston to Captain Elliot, dated 8th Nov. 1833; pages 128 and 129 of the correspondence.

Lord Palmerston, when issuing final orders in the cases of Messrs. Keating and Innes, in November 1836, warned Captain Elliot that the power of expulsion of British subjects from China had ceased to exist. "His Majesty's Government," he wrote, "are fully aware of the inconvenience arising both from the undefined "state of the jurisdiction of the Superintendents in China, and from their want "of power to enforce decisions, to which they may come, on matters submitted to "them by members of the commercial body in China. The general question as to "the nature, extent, and powers of the future establishment in China is now under "the consideration of His Majesty's Government; and I am in hopes that at no distant "period some effectual remedy may be provided for the inconvenience to which I have "more particularly adverted. In the meantime I have to recommend to you to confine "your interference, when called for, as much as possible to friendly suggestion and "advice to the parties concerned. The assumption of powers which you have no means "of enforcing, and the issuing of injunctions which are set at nought with impunity, "can only tend to impair the authority and lower the dignity of His Majesty's "Commission in the eyes of those by whom it is of importance that it should be looked "up to with respect."

Letter from Captain Elliot to Lord Palmerston, dated 14th Dec. 1836; page 139 of the correspondence.

The orders of His Majesty's Government, dated 15th June 1836, appointing Captain Elliot to be Chief of the Commission, reached China on the 14th December of that year; and Captain Elliot entered at once upon his duties with, as he said, "a strong "persuasion that a conciliatory disposition to respect the usages, and above all to "refrain from shocking the prejudices of the (Chinese) Government, *was* the course "at once most consonant with the magnanimity of the British nation, and, with the "substantial interests at stake, in the maintenance of peaceful commercial relations."

Lord Palmerston's letter of the 22nd July 1836, directing him not to attempt to re-open communications with the Canton Government through the Hong merchants, and not to give to his communications with the Government the name of petitions, had not reached him, and, in the absence of any such instructions, he at once determined to abandon all claim to a right of direct communication with the Governor, and to correspond with him through the Hong merchants in the manner usual with the Select Committee of the supracargoes of the East India Company. The orders issued, also, by the Local Government for the expulsion of British subjects from China, afforded an additional reason for his anxiety to establish himself at Canton as soon as possible.

Enclosure 1 in a letter from Captain Elliot to Lord Palmerston, dated 30th Dec. 1836; page 142 of the correspondence.

Enclosures 2 and 3 in the same letter; page 143 of the correspondence.

He accordingly prepared a respectful and conciliatory address to the Governor, informing him of his appointment as "Chief English Authority" in China, and requesting that he might be permitted to proceed to Canton, under the usual passport, as soon as possible, for the performance of his duties; superscribed the address as a "pin" or petition, and wrote a note to Howqua, the senior Hong merchant, requesting him to present the address to the Governor. He then forwarded the address on the 16th December 1836 to the agents of the East India Company at Canton and to Messrs. Jardine and Dent, and requested them to deliver it to Howqua for presentation.

Enclosures 4, 5, and 6 in the same letter; pages 143-145 of the correspondence.

The address was delivered, as requested, and on the 23rd December 1836 Howqua presented to the Company's agents and merchants, who had delivered it, the edict issued by the Governor upon the subject. The 13 Hong merchants, in a body, also addressed a letter to Captain Elliot, forwarding a copy of the edict for compliance.

In the edict the Governor acknowledged with satisfaction the "reverential and submissive" tone of Captain Elliot's address, and remarked that "he would doubtless "be implicitly obedient in all things." He observed, however, that he designated himself as an "officer from afar," and appeared to be an Eye and not a Chief Supracargo, which was wholly inconsistent with the manner in which affairs had been up to that time conducted. Before submitting a report to the Throne for instructions, he deputed, therefore, two district magistrates, the Macao sub-prefect, and the Hong merchants to make inquiries at Macao, whether Captain Elliot had really received written credentials from the King of Great Britain, what was his office, and what was the proposed nature of his duties as Superintendent, whether he had any ulterior aim and

object, and why an Eye had been sent instead of a Chief Supracargo. "If," said the Governor, "on examination no covert purpose appear, then let orders be immediately "enjoined on the said foreigner to reside for a time at Macao, and wait there till I, "the Governor, shall have sent in a memorial to the great Emperor. And as soon as "I shall learn His Majesty's gracious pleasure, I will then address a communication "to the Superintendent of Maritime Customs, calling on him to grant a passport for "the said foreigner to come up to Canton and oversee matters. When he thus comes "up, he must comply with the old regulations, having a residence at Canton and "another at Macao, and coming and going at the regular seasons."

Letter from Captain Elliot to Lord Palmerston, dated 30th Dec. 1836; pages 139–142; and enclosures 7 and 8; page 146 of the correspondence.

Captain Elliot furnished an explanation in writing, upon the points specified by the Governor, for the information of the officers deputed for the purpose; and replied to the edict on the 28th December 1836, through the Hong merchants, admitting the propriety of his remaining at Macao until the Emperor's pleasure had been ascertained, and explaining that his duty at Canton would be to conduct the public business of his nation and to preserve by all possible means the peace which existed between the two countries. The Chinese officers at Macao had no personal communication with Captain Elliot. The Hong merchants wished him to visit the officers, but this he declined to do, and offered to receive them at his own house. The officers, however, would not agree to this, and the explanation required was eventually given in writing to the Hong merchants. Their conduct on the occasion is significant of the conditions upon which communication with the authorities was re-opened.

Letter from Captain Elliot to Lord Palmerston, dated 30th Dec. 1836; pages 139–142 of the correspondence.

"I have thus, my Lord," wrote Captain Elliot to Lord Palmerston, "once more "opened the communications with this Government, and I sincerely trust your Lordships "will see no reason to disapprove of my motives, or of the manner of my proceeding. I "have acted under a strong persuasion that all hope of peacefully carrying the point of "direct official intercourse was futile; that the actual condition of circumstances was "hazardous; that the instructions in my hand do not warrant the assumption that I have "any high political or representative character, and, finally, that the course itself which "I have pursued is neither derogatory to the national honour nor at variance with sound "principles of public propriety and utility."

Letter from Captain Elliot to Lord Palmerston, dated 12th Jan. 1837, and enclosure; page 148 of the correspondence.

In a subsequent letter Captain Elliot forwarded a memorandum by Mr. Morrison, the Chinese Secretary of the Commission, upon the exact signification of the Chinese character "pin," and suggested that it meant rather a "respectful exhibition of information" than a petition. As stated in the memorandum, however, "pin" was the word used by Chinese officers below the third rank, of whom the highest corresponded in station to the prefects and sub-prefects of departments in France, when addressing the higher provincial authorities; and replies submitted by these authorities to such munications were designated as commands. "Pin," according to Dr. Morrison's Chinese dictionary, was to "state to a superior, whether verbally or by writing, "whether petitioning something or to give information of, whether from the people "to an officer of Government, or from an inferior officer to a superior several degrees "higher."

It can hardly, therefore, be denied that the English word "petition" is a sufficiently accurate translation of the Chinese "pin"; and Lord Palmerston, on receiving these letters, at once issued the following orders:—

Extract from a letter from Lord Palmerston to Captain Elliot, dated 12th June 1837: page 149 of the correspondence.

"I have now to desire that, upon the receipt of this despatch, you will forthwith "inform the Hong merchants and the Viceroy that His Majesty's Government cannot "permit that you, an officer of His Majesty, should hold communications with an officer "of the Emperor of China through the intervention of private and irresponsible "individuals. You will, therefore, request that any communications, which the "Governor may have to make to you in future, may be sent to you direct, and that the "Governor will consent to receive directly from you any communications on public "affairs, which the interests of the two Governments may require you to make to him. "You will also explain, that if in future your written communications should not be "endorsed with the character, which is usually adopted by subordinate officers in China "when addressing representations to superior Chinese authorities, this alteration will "not arise from any want of respect on your part towards the Governor, but will "simply be the result of the established usages of England, which do not admit that "an officer commissioned by the King of England should so address an officer "commissioned by any other sovereign."

Letter from Captain Elliot to Lord Palmerston, dated 27th Jan. 1837, and enclosures; pages 149–152 of the correspondence.

In the meantime the Governor of Canton, who was evidently satisfied with Captain Elliot's attitude, submitted a report to the Emperor recommending that Captain Elliot might be allowed to proceed to Canton for the discharge of his duties as the Chief Controlling English Authority, in accordance with the regulations under which the Select

Committee of supracargoes had formerly acted. "Though he is not," wrote the Governor, "precisely the same as the Chief Supracargo hitherto appointed, yet the "difference is but in name, for in reality he is the same. And after all, he is a "foreigner to hold the reins of foreigners; and if not allowed to interfere in aught "else, it would seem that an alteration may be admitted."

Letters from Captain Elliot to Lord Palmerston, dated 18th and 22nd March 1837, and enclosures; pages 193 and 195 of the correspondence.

The Emperor's sanction to this recommendation was received at Canton on the 14th March 1837. "It is our Imperial pleasure," he said, "that he be permitted to "repair to Canton, under the existing regulations applicable to Chief Supracargoes, and "that on his arrival at the provincial capital he be allowed to take the management "of affairs. . . . In future he is to reside sometimes at Macao and sometimes at "Canton, conforming herein to the old regulations; and he must not be permitted to exceed "the proper time, and by loitering about gradually effect a continued residence. The "said Governor and his colleagues are hereby authorised to hold the said foreigner "responsible for the careful control of affairs, so that all disturbances may be prevented. "They should issue strict orders to all the officers, civil and military, and to the Hong "merchants, requiring them to inform themselves from time to time of the true state "of things, and to keep a watch on the said foreigner. If he exceed his duty and act "improperly, or combining with traitorous natives, seek to twist the laws to serve "his private ends, he must immediately be driven back to his country in order to "effectually remove the source of evil."

This edict was communicated by the Governor to the Superintendent of Customs, and by the Superintendent of Customs to the Hong merchants; and the orders, which it contained, as to the conditions under which Captain Elliot was permitted to proceed to Canton, the nature of his responsibility, and the necessity for living partly at Macao and partly at Canton were enjoined upon Captain Elliot by the Hong merchants.

Letter from Captain Elliot to Lord Palmerston, dated 18th March 1837; page 193 of the correspondence.

"For the first time in the history of our intercourse with China," wrote Captain Elliot to Lord Palmerston, "the principle is most formally admitted, that an officer of "a foreign sovereign, whose functions are purely public, should reside in a city of the "Empire." The position which he accepted, however, both in regard to residence at Canton and correspondence with the authorities, was the same in every particular as that of the East India Company's servants; and a study of the edicts, issued by Governor Loo in regard to Lord Napier leaves little doubt that the same position would have been accorded to him, if only he had been sufficiently submissive. A change of any kind was distasteful to the Chinese, but the principal objection to the appointment of an officer, as distinguished from a trading chief, appears to have been the claim advanced for correspondence upon terms of equality with the Governor himself.

Letter from Captain Elliot to Lord Palmerston, dated 1st April 1837; pages 196-198 of the correspondence.

Captain Elliot applied for his passport through the Hong merchants, and proceeded to Canton, in April 1837. He had, as is clear from a letter written at the time to Lord Palmerston, no intention of permanently taking orders from the Hong merchants, and trusted that, when once established at Canton, he would by tact and judgment soon carry the principle that the Governor's communications should be addressed to him and not to the merchants. "Upon the side of His Majesty's Government," he wrote, "it "appears to me, that no condition is wanting to give to the representations of its agent "here a complete formal character. They are the communications of a foreign officer "recognised by the Emperor, addressed to the head of the Provincial Government, "and they reach his Excellency's hands in a sealed shape. As respects the com-"munications of the Government intended for me, the state of the case is very different. "They are injunctions to persons with whom, in the admission of the Emperor, I have "no congeniality of pursuit, and who therefore in common sense ought to have no "public relations with me." And after further explanation of the objections to such a form of correspondence and the inconvenience likely to result from it, he concluded the letter as follows: "In my own humble opinion the actual manner of communication "from us to the Chinese is sufficiently formal and complete for all our purposes. From "them to us and for their objects it is defective. I can assure your Lordship that this "is a condition of circumstances far less inconvenient to His Majesty's Government "than to the Provincial authorities. The defect, however, is of their own creation, and "the remedy is in their own hands."

Letter from Captain Elliot to Lord Palmerston, dated 27th July 1836; pages 137 and 138 of the correspondence.

Captain Elliot's correspondence on the subject of opium, in the summer of 1836 and early spring of 1837, must now be referred to. As early as July 1836, writing as Second Superintendent, he discussed the probable causes and effects of the proposal for the legalisation of the opium trade made by Heu Nae-tse, which had, he supposed, been communicated to the Foreign Office by Sir G. Robinson. "This stroke (the legalisa-

" tion of the trade)," he said, "is aimed at the overthrow of the Lintin and outside " trade, and the limitation of our commercial sphere to Canton and the Hong merchants. " The extent to which it is successful, must depend mainly upon the adherence to the " moderate duties and charges proposed in the Memorial . . . . . Smuggling " there may be at Canton, as there is now of all sorts of merchandise to an immense " extent, but there will be smuggling nowhere else than at Canton, that is always " supposing that the charges are kept at the moderate rate now proposed, the pro- " babilities of which I cannot judge of. It has been a confusion of terms to call the " opium trade a smuggling trade. It was formerly a prohibited trade, but there was " no part of the trade of this country which had the more active support of the local " authorities. It commenced and has subsisted by means of the hearty connivance " of the mandarins, and it could have done neither the one nor the other without " their constant countenance.

"In my mind it is much less the Lintin or the coast trade, that have produced " this striking measure, than the tea and the tract missions to the coasts of last " year. These events attracted the very anxious notice of the Court itself, and this " scheme is the result. The Lintin trade, as long as it was quietly pursued, " always had the countenance of the high mandarins of this province, and though " they were naturally unfriendly to its extension to the coast of the neighbouring " provinces, still they were disposed to stifle complaints to the Court upon that " subject, in order to stave off searching inquiry into their own affairs here. " Tracing backwards, no doubt the opium will be found to be the great primary " cause of this change. But the immediate cause here has, I firmly believe, been " the distribution of tracts. The opium ships might have continued to visit the " coasts with little more than former notice, but the books alarmed the Court " seriously."

Letter from Captain Elliot to Lord Palmerston, dated 2nd Feb. 1837: pages 153-156 of the correspondence.

As Chief Superintendent, at the beginning of February 1837, Captain Elliot transmitted to Lord Palmerston Heu Naetse's memorial, the orders of the Emperor upon it, the report of the Local Government at Canton, the memorials of Choo Tsun and Heu Kew, and the second Imperial edict, directing that the subject should be further considered; and again expressed an opinion that the proposal for the legalisation of the opium trade had been dictated more by political and financial considerations, than by "the awakening spirit of public virtue, upon the part of the Chinese Government." "The opium trade," he wrote, "only commenced or subsisted, as its present state of " stagnation indisputably proves, by reason of the hearty concurrence of the chief " authorities of these provinces, and indeed also of the Court. No portion of the trade " to this country more regularly paid its entrance than this of the opium. The least " attempt to evade the fees of the mandarins was almost certain of detection and " severe punishment, and a large share of these emoluments reached not merely the " higher dignitaries of the Empire, but, in all probability, in no very indirect manner " the Imperial hand itself. The origin of the legalisation scheme is to be ascribed, I " believe, mainly if not entirely to the following causes:—Firstly, to the intense " political disquietude of the Court at the extension of the trade on the north-east " coasts. Secondly, to the increasing alarm, which is felt at what is considered to be " the irrecoverable disappearance of the real wealth of the country, that is to say, the " silver in exchange for the opium.

"The first cause has possibly operated with additional force since the events of " 1834 at Canton; and the visits of the missionaries to the coasts in 1835 and 1836 " with tracts in the Chinese language, have also unquestionably attracted the anxious " attention of the Court."

Whatever might have been the motive of the proposal to legalise the trade, the ultimate adoption of the scheme was, in Captain Elliot's opinion, certain. The Local Government had tried, with considerable success, to suppress the smuggling from Lintin, and it was confidently rumoured that the Governor had sought permission from the Court to continue the restrictive policy upon trial for one year; but these measures were, he considered, merely preliminary to the establishment of the trade upon a legal basis. The proposals of Heu Naetse were more politic and opportune than those of his opponents, and were therefore, in his opinion, more likely to be successful.

Trade in the meantime was in a state of stagnation. The abolition of the Company's monopoly had, as Captain Elliot said, been followed by overtrading; the imports of British manufactures had been heavy, and the prices of China produce had been forced up by competition; while the interruption of the opium sales had locked up silver, and had thereby increased the embarrassment of the British merchants. With the object,

t herefore, either of inducing the Provincial Government to relax its restrictive zeal, or of expediting the anticipated sanction to the legalisation of the opium trade, Captain Elliot requested the Naval Commander-in-Chief in India to send a ship of war to the China Seas "for the purpose of affording such countenance to the general British trade "in China, as *might* be practicable, without any risk of inconvenient discussions or "collision with the (Chinese) Government;" and applied also to the Governor-General of India for one or two of the Company's cruisers for the same service. "In the actual "state of our commerce with China," he wrote to the Governor-General, "I believe I "may say that the interruption of the opium traffic must have the effect, not merely "of temporarily crippling our means of purchasing in this market at all, but "undoubtedly of placing us, in respect to the prices of the export staples, completely "in the power of what may justly be described to be a co-partnership of native "dealers. The failure of the opium deliveries is attended with an almost entire "cessation of money transactions in Canton. And in the glutted condition of this "market your Lordship will judge how peculiarly mischievously the present stagnation "must operate on the whole British commerce with the Empire." . . . . . "I would beg to observe to your Lordship that the frequent and short visits of ships "of war to this anchorage, and in the neighbourhood of the points to which the out-"side trade has extended, seem to me to be movements calculated either to carry the "Provincial Government back to the system, which has hitherto prevailed, or to "hasten onwards the legislative measure from the Court."

Letter from Captain Elliot to Rear-Admiral Sir Thomas Bladen Capel, K.C.B., dated 2nd Feb. 1837; page 189 of the correspondence.

Letter from Captain Elliot to Lord Auckland, Governor-General of India, dated 2nd Feb. 1837; page 188 of the correspondence.

On the 21st February 1837, Captain Elliot transmitted to England the Imperial edict, which was issued on the receipt of the second report from the Local Government of Canton, containing the final recommendations of the Governor and his colleagues in regard to the prohibition of the importation of opium and the exportation of silver. His letter to Lord Palmerston betrays some misconception in regard to this edict. He speaks of it as issued in reply to the report submitted by the Governor and Deputy Governor of Canton on the 7th September 1836, supporting Heu Naetse's proposals, whereas it is clear that it was issued in reply to the further report, called for from them in consequence of the memorials of Choo Tsun and Heu Kew. The purport of the edict is apparently to prohibit entirely the exportation of sycee silver, and to sanction the measures proposed for stopping up the source of the evil, by preventing effectually the importation of opium. Captain Elliot, however, expressed an opinion to the effect that sanction had actually been accorded to the proposed withdrawal of the prohibition against opium. "Founding" he wrote, "my conclusions "entirely upon the edict, (and the authenticity of that is beyond dispute), I cannot "hesitate to repeat to your Lordship my opinion, not only that this measure is deter-"mined, but that the Provincial Government is actually in possession of the pleasure "of the Court to admit the opium."

Letter from Captain Elliot to Lord Palmerston, dated 21st Feb. 1837; pages 189 and 190 of the correspondence.

The conviction that the trade would shortly be legalised had, no doubt, an effect upon Captain Elliot's proceedings, but it is quite incorrect to suppose that he was a friend or supporter of the trade. "It cannot be good," he wrote in this letter, "that "the conduct of a great trade should be so dependent upon the steady continuance of "a vast prohibited traffic in an article of vicious luxury, high in price and liable "to frequent and prodigious fluctuation. In a mere commercial point of view, there-"fore, I believe it is susceptible of proof that the gradual diversion of British capital "into other channels of employment than this would be attended with advantageous "consequences.

"The effect upon the Indian finance of its sudden cessation could not fail to be "extremely perplexing; but I have not been a careless observer since I have been in "this country, and I hope your Lordship will let me say that there are many cogent "reasons for regretting the extent to which the Indian income is dependent upon such "a source of revenue."

A few days before Captain Elliot's departure from Macao for Canton, in April 1837, news had reached him from Singapore of the rescue by an English ship of seventeen Chinese, who were found in a sinking junk; and (to use his own words) it occurred to him that the communication of this gratifying intelligence might be made subservient to the purpose of gradually accustoming the Governor to recognise the distinction between his station and that of the foreign commercial agents in China. He accordingly submitted from Macao, on the 8th April, a politely worded address to the Governor, informing him of the rescue and safety of the Chinese, and acknowledging gratefully the acts of kindness which his shipwrecked countrymen had often experienced upon the coast of China;

Letter from Captain Elliot to Lord Palmerston, dated 27th April 1837; and enclosures 1-7; pages 198-205 of the correspondence.

and remarked that "the interchange of these charities *could* not fail to strengthen the "bonds of peace and goodwill between the two countries."

On the 12th April, in another address, he reported his arrival at Canton, and requested that he might be permitted, in accordance with the custom of his nation, to pay his personal respects to the Governor.

The Governor, in an edict to the Hong merchants, dated 13th April, admitted that the "dutifulness" displayed in the rescue of the Chinese was worthy of commendation; and ordered the merchants to inform Captain Elliot that when the men arrived at Canton they would be sent on to their own province. He took umbrage, however, at the wording of the address from Macao, and on the 19th April issued a second edict upon the subject. "But for all," he said, "for those without as well as "those within the pale of the Empire, there are rules and bonds of action, styles and "modes of expression, becoming that dignity, which has so long been respected. To "the renovating principles for so long a period emanating from our Empire, the "barbarians on every side have submitted themselves. They have tendered to the "Celestial Empire their respectful services, and this Empire stands in truth at the "head of the lands at its remotest borders, in no other character than that of a ruler "amid ministering servants. As to foreign merchants, permission is granted them to "trade and to export, and thus is bestowed on them the means of obtaining profit. And "in regard to those in distress, they are rescued from their distresses, and with needful "gifts are sent back. These things arise solely from the all-pervading goodness, and "cherishing kindness of the Great Emperor, whose favours are constant and universal. "Between him and the small, the petty, how can there exist anything like the 'bonds "'of peace and goodwill?'"

"The said Superintendent, in his address on this occasion, has failed altogether to "conform himself to the old rules, has omitted the respectful expression 'Celestial "Empire,' and has absurdly used such words and expressions as 'your honourable "country,' and "peace and goodwill between the two nations,' giving utterance to his "own puffed-up imaginations. Not only is this offensive to the dignity to be maintained, "but also the ideas therein expressed are absurd and ridiculous."

He did not, he explained, plainly correct Captain Elliot, and cast back his address, because he had only recently arrived, and was possibly not informed upon many matters; but it was necessary to prevent mistakes of the kind in future. He accordingly directed the senior Hong merchants to enjoin an order upon Captain Elliot, requiring him to word his addresses in the manner called for by the dignity of the Celestial Empire, and commanded them to carefully examine his addresses in future before presentation, and to return them, if they should contain any matter inconsistent with that dignity.

This order Captain Elliot determined to resist. He knew, as he wrote to Lord Palmerston, that it had long been "practically admitted" that the Hong merchants had "no pretensions to meddle" with addresses transmitted by the Select Committee of the East India Company's supracargoes, though he was "not aware that the principle "had ever been formally and specifically conceded." He accordingly sent at once for Howqua, the senior Hong merchant, and directed the messenger to inform him that if he did not attend within the hour he need not take the trouble to go at all, as the communication, which he (Captain Elliot) had to make to the Governor, would be submitted by another channel; and he would leave Canton in a few hours. Howqua appeared within the time, and a discussion commenced. Captain Elliot informed him that he did not dare to accept such an order, as the Governor had issued, and that he proposed to return it immediately. Howqua entreated him not to be precipitate, and at his solicitation Captain Elliot deferred action for two days. On the 22nd, however, he returned the objectionable edict to Howqua, and submitted an address to the Governor, respectfully informing him that it was impossible for him, as a foreign officer and not a merchant, to submit his addresses to the approbation of the Hong merchants before their transmission; and adding that in future he could only receive such official communications, sealed with the Governor's seal, as the Governor should be pleased to address directly to him, and not to the merchants. He announced also verbally to Howqua that if the matter were not satisfactorily adjusted by midnight on the 28th, he would leave Canton.

On the 24th Howqua returned, and informed Captain Elliot that the Governor had declared it was wholly out of his power to communicate with him direct; but had admitted that his objections to any interference by the Hong merchants with his addresses to Government were well founded. In consideration also of the fact that

Captain Elliot was an officer, he was prepared to address edicts on the subject of his communications to the three senior Hong merchants, who held honorary official rank, and not to the whole Hong body.

It is amusing to find the wily Howqua proposing, as a special concession to the dignity of a British officer, an arrangement that was* objected to by the Company's servants, who regarded it as an insidious attempt to draw closer the restrictions upon foreign commerce, and to establish the dreaded Cohong.

Captain Elliot, however, was disposed to waive the point of direct communication from the Governor to him, provided that the edicts issued to the merchants were not disrespectful to his Government, and that he was permitted to submit sealed addresses to the Governor; and the Governor also, who felt probably that he had taken up a false position, was evidently anxious for a compromise.

On the 25th, therefore, an edict was issued, in which the Governor formally recognised Captain Elliot's right to submit sealed addresses through the Hong merchants, as it was evident that he had no desire to do anything that was contrary to the requirements of dignity, but declared it to be inexpedient to alter the established rule of the Celestial Empire, which required that commands to foreigners should always be addressed to the senior Hong merchants to be enjoined by them.

Captain Elliot replied to this edict, on the 27th, offering his respectful thanks for the order that his addresses should be transmitted to the Governor by the three senior Hong merchants in a sealed form, and expressing his intention of continuing to carry on communications in the manner prescribed by the Governor, until he should receive further instructions from his own Government.

Captain Elliot, as he himself admitted, was not aware that the privilege of communicating with the authorities in the Chinese language, "without previous explanation with the Hong merchants," had been conceded† by the Governor of Canton in 1814; and Lord Palmerston and the officials at the Foreign Office were also, evidently, unaware of the fact. It appeared, therefore, that Captain Elliot had obtained a substantial concession; and Lord Palmerston, on receiving his letter of the 27th April, containing an account of these occurrences, communicated to him the following orders:—

Letter from Lord Palmerston to Captain Elliot, dated 2nd Nov. 1837; page 192 of the correspondence.

"In your despatch of the 27th April you detail the particulars of various communications which you had had with the Viceroy of Canton, with a view to the assertion of your right to forward your communications direct to that officer in a sealed form, and to receive those of his Excellency in a similar form addressed direct to yourself and not to the Hong merchants.

"Her Majesty's Government have learnt with satisfaction that you had succeeded in obtaining the admission of the first of these claims, which relates to the mode of sending in your own communications, and I am to express to you the approbation of your Government of the course which you pursued on this occasion.

"You will not fail on every suitable opportunity to continue to press for the recognition on the part of the Chinese authorities of your right to receive direct from the Viceroy sealed communications addressed to yourself, without the intervention of Hong merchants."

Letter from Captain Elliot to Lord Palmerston, dated 24th May 1837, and enclosure; pages 206 and 207 of the correspondence.

The Governor of Canton replied, by edict, on the 1st May 1837 to Captain Elliot's address of the 27th April upon the subject of his future communications. "As to commands," he said, "which I the Governor may have to give, such commands have hitherto been enjoined and inculcated through the medium of the senior Hong merchants. This concerns the settled dignity of the Celestial Empire, and the said nation, in its up-gazing contemplation of the majesty and benignity of the Empire, will assuredly indulge no foolish expectations of change."

This edict convinced Captain Elliot that no further concession was likely to be obtained from the Governor by negotiation. "Upon the whole, perhaps," he wrote to Lord Palmerston, "your Lordship may be led to think that there can be no advantage in wringing a change of practice in this respect from the Chinese Government; and I would submit that, if the actual manner of the intercourse, direct with the Governor

* "In discussions with the provincial officers," wrote the Select Committee to the Court of Directors in 1825, "we have always evinced to the Hong merchants our sense of the impropriety of conducting any public business to which every Hong merchant is not a party; the only way we possessed of demonstrating our opposition to the formation of a Cohong, was by always insisting on the attendance of all the merchants when the [illegible] presented [illegible] letters or communications with [illegible] Government." Letter of 19th March 1825 in App. II. to the Third Report of the Select Committee of the House of Commons on the Affairs of the East India Company, dated 11th October 1831.

† See page 14 of this Narrative.

" indirect from him), be not best suited to the condition of circumstances in this " country, at least its further modification had better be left to time and favourable " opportunities."

Letter from Captain Elliot to Mr. Backhouse, dated 2nd June 1837, and enclosures; pages 207–209 of the correspondence.

Abandoning, therefore, for the time all endeavours to induce the Governor to consent to issue orders to him direct, he determined to try and secure some modification of the regulation which required him to obtain a passport upon each occasion when proceeding from Macao to Canton. In this he was completely successful. He judiciously did not remain too long at Canton upon the occasion of his first visit, and then availed himself of the opportunity afforded by a disturbance among some British seamen at Whampoa to return, and to apply to the Governor for a relaxation of the rule. The Governor at once made the required concession. "The said Superintendent's official duties," he said, in an edict issued in reply on 1st June 1857, "consisting in the particular control " of the merchants and seamen, it is of course right that whenever troubles arise " among these classes, he should immediately proceed faithfully to investigate and " settle them. The said Superintendent's present representation, 'that if, during the " 'period of his stay at Macao, he should have affairs to attend to at Canton or " 'Whampoa, he fears that to be required always to wait till his application for a " 'passport is answered will be productive of injurious delays,' is a correct statement of " the matter, and it is my duty to permit him, from time to time as business may " occur, to come up and go down in an European boat, not making it necessary to " apply for a passport. On every occasion before the said Superintendent leaves " Macao, and after he returns, it will be his duty to report clearly to the sub-prefect " at Macao the circumstance and the time, in order that that officer may report the " same to myself and the Superintendent of Maritime Customs, severally, for the sake " of thorough precision."

"I venture," wrote Captain Elliot to Mr. Backhouse, on the 2nd June 1837, in the letter reporting this arrangement, "to offer my humble opinion that there is an " increasing disposition upon the part of the Chinese Government to conciliate that of " His Majesty; and I hope it will be thought that my own measures and respectful " approaches have, in some sense, served to encourage this spirit of accommodation."

Letter from Captain Elliot to Mr. Backhouse, dated 3rd July 1837, and enclosures; pages 209–214; and letters from Captain Elliot to Lord Palmerston dated 29th Aug. and 4th Sept. 1837, with Enclosure 1 in the latter letter; pages 215–218 of the correspondence.

An instance of Chinese humanity to foreigners in distress occurred about this time. Some of the seamen on a British ship, the "Fairy," mutinied, and murdered their captain in the China Seas, some time in 1836, and landed 15 of the crew (a Portuguese and 14 lascars), who refused to join in the outrage, upon the coast of Fuhkien. The men, who were landed, were well treated by the Chinese, and were eventually forwarded, under the Emperor's orders, by the Governor of Fuhkien to Canton, in order that they might be sent back in some vessel to their own country. Half the journey to Canton was performed in chairs, and on their departure from Foochowfoo each man received a present in silver of about 50*s*.

Before the arrival of the men at Canton, Captain Elliot, who had heard of their detention in Fuhkien, and thought that the visit of a ship of war to that province might have a good political effect, requested Captain Quin, of Her Majesty's sloop "Raleigh," which had been sent on duty to the China station (in connexion, apparently, with the Superintendent's requisition of the 2nd February), to proceed to Foochowfoo and apply to the Governor for their release. Captain Quin, who was accompanied by the Rev. C. Gutzlaff, performed this service with discretion, but it does not appear that his visit had much political importance, or was productive of any permanent result. The "Fairy's" men left Foochowfoo at the end of June, on the day after the arrival of the "Raleigh" at the mouth of the Min River; but the Governor, Deputy Governor, and Lieutenant-General, replied civilly enough to an address from Captain Quin, and the people were friendly and obliging. The orders of the Governor and his colleagues, however, which were transmitted to Captain Quin by the Prefect of Foochow and four other naval and military officers, warned him that foreign ships were not allowed to visit the province of Fuhkien, or to trade anywhere but at Canton, and that he should, therefore, depart, as soon as possible, and not venture to sail northwards under any pretext. The address presented, also, was returned.

Captain Elliot suggested that a letter should be written by Lord Palmerston to the Governor of Canton to thank the Chinese Government for their kindness to the castaways, but no notice seems to have been taken of the suggestion.

Enclosure 3 in the letter from Captain Elliot to Mr. Backhouse, dated 3rd July 1837; pages 210 and 211 of the correspondence.

Vice-Admiral Sir T. Bladen Capel, when sending the "Raleigh" to China, appears to have felt some uneasiness as to the nature of the service upon which she was to be employed; and Captain Elliot thought it necessary to assure him, that he was fully sensible of the extreme impropriety of committing His Majesty's Government to any

appearance of countenancing illicit traffic, and that he should carefully abstain from moving the Commander of any ship of war on the station to take any steps which could possibly bear such a construction.

On the 20th September 1837 an affray occurred at Canton in which a Chinese was said to have been stabbed by a lascar; and the two lascars, who were concerned in the affray, and two others, who were on shore at the same place, were seized by the Chinese and confined in the Consoo House. On the following morning the Chinese magistrate forwarded the lascars to Captain Elliot for examination, but declined to leave them in his charge. In the evening, however, Captain Elliot, who was afraid that the men might be removed during the night into the city, if they were left at the Consoo House, sent for the senior merchants, and insisted that they should be made over to him for trial, in the presence of Chinese officers, in accordance with the laws of Great Britain. Howqua argued that the offence had been committed in China, and that the offenders should, therefore, be tried by the Chinese Courts; but Captain Elliot informed him that it was impossible to consent to the trial by Chinese of British subjects for a breach of the laws of China, "whilst those laws were "only partially administered towards them and whilst appeal to the higher Chinese "tribunals *was* entirely shut out from them," and that all which could be justly expected from the British Government under such circumstances was the provision of "means for the fair trial of British offenders against Chinese life or property by "British laws and British officers." He threatened also to leave Canton if the men were not made over to him by 10 o'clock that night, and hinted that an application for their release might be presented by 800 or 1,000 men from Whampoa in the event of his departure. Howqua entreated him to wait until he could obtain the Governor's orders in the morning; but Captain Elliot was firm, and Howqua yielded and surrendered the men.

Letter from Captain Elliot to Lord Palmerston, dated Sept. 26th, and postscript dated Oct. 3rd, 1837; pages 231 and 232 of the correspondence.

The man, who was stabbed, does not seem to have been in any danger, and Captain Elliot's demand for the surrender of the lascars for trial was therefore justified by Chinese practice and precedent. No further proceedings, however, seem to have been taken. Captain Elliot left Canton on the 30th September, taking the lascars with him; and on the 1st October the Chinese magistrate issued an order, directing that they should be finally made over to him, to be dealt with in such manner as he should think proper. The nature and extent of the Superintendent's legal authority were, to say the least of it, doubtful; and as the Chinese dropped the case, the men appear to have escaped without a trial.

In a letter to Lord Palmerston, describing the occurrence, and explaining the action he had taken, Captain Elliot, in October 1837, expressed an earnest hope that no time might be lost in the formation of adequate judicial and police institutions for the government of the King's subjects in China, and assured Lord Palmerston that it was in his power to secure from the Chinese provincial authorities the most formal sanction to their operation.

A China Courts Bill, it may be observed, was introduced in Parliament by Lord Palmerston in 1837, and again in 1838, to create a Court of Civil jurisdiction at Canton, and to enable the Criminal Court, there established, to sentence a British subject to expulsion from the limits of the Court's jurisdiction for breach of any regulation, made by the King in Council, in accordance with the powers conferred by the Act of 3 and 4 Will. IV. c. 93, for the control of British subjects in China. The Bill passed the House of Commons in 1837 without opposition; but was withdrawn from the House of Lords, in consequence of expected opposition from Lord Ellenborough, and for reasons connected with the state of the Government at the time. In the spring of 1838 the Bill was re-introduced; but was opposed in the House of Commons by Mr. Hawes, on behalf of Sir G. Staunton, on the ground that it was inexpedient to confer upon the Superintendents judicial powers, of the nature proposed, without the consent of the Chinese Government. Sir J. Graham also expressed himself unfavourable to any extension of the authority of the Superintendents; and the Bill was accordingly withdrawn in Committee, at the end of July, in consequence of this opposition.

Hansard's Parliamentary Debates, 3 series, vols. 44, from 9th July to 16th Aug. 1838, and 53, from 24th March to 11th May 1840.

The assertion by Howqua of the Chinese right of jurisdiction in the lascars' case was made use of by Mr. Hawes, as proof that the Chinese Government would not assent to the exercise of jurisdiction by British Courts in Chinese territory; but it is doubtful how far Howqua was in earnest on this occasion, and it is also doubtful how far he was authorised to express the views of the Provincial Government. On hearing of Sir G. Staunton's opposition to the China Courts Bill, he professed himself unable to

Letter from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839, pages 339 and 340 of the correspondence.

understand the object of his objections; and entreated Captain Elliot to remind the Government of Great Britain that the Chinese Government never interposed in the affairs of foreigners, except in cases of extreme urgency, upon the principle that it was ignorant of their laws and customs, and that it would be unjust to subject them to rules made for people of totally different habits, and brought up under a totally different discipline. This reasoning, as Captain Elliot said, was marked by wisdom and moderation, but the question bristled with difficulties; and it is not easy to see how the difficulties could have been solved without the aid of force. The Chinese Government, as it afterwards showed, was willing enough to assert rights of jurisdiction, when the objects, which it had in view, could not be attained without the exercise of such rights.

Letter from Captain Elliot to Lord Palmerston, dated 18th Nov. 1837, and enclosure 1: pages 233–236 of the correspondence.

From the time of his first arrival in Canton, in April 1837, Captain Elliot was frequently urged by the senior Hong merchants, in compliance, as they alleged, with special orders from the Governor, to send away the opium receiving-ships from their customary anchorages outside the Port of Canton; and, on the 4th August, the Governor and Deputy Governor issued an edict upon the subject, reciting the substance of an Imperial edict, which they had received from Pekin, and directing the Hong merchants to require the English Superintendent to send away all the opium ships then anchored in Chinese waters within 10 days. The Imperial edict is thus summarised in the correspondence: "A memorial has been laid before the Emperor, representing that "more than 10 English vessels are constantly anchored outside the port in the "anchorages of Kapshuy-moon and Kumsing-moon; that the illicit trade in the "importation of opium and the exportation of sycee silver depends entirely on these "vessels; and that they form also places of refuge for proscribed smugglers. The "Emperor accordingly directs that the resident foreigners be immediately required to "send them away, and also that steps be taken to punish all natives engaged in the "smuggling of opium."

Captain Elliot sent no written reply to this edict, but informed the merchants, as he had already done in reply to their verbal representations on the subject, that his orders charged him with the superintendence of the legitimate trade of Canton; that his Government had "no formal knowledge" of the existence of any other traffic; and that he could, therefore, only concern himself with the duties which he had due authority to perform.

On the 17th August, the Governor and Deputy Governor issued a second edict, censuring the merchants for not having obtained a reply from the Superintendent, who, as they said, was authorised to dispose even of trifling questions, and ought certainly to interfere in an important matter, which was contrary to the laws of the Chinese Empire, and must, therefore, be at variance with his own instructions, and requiring them to again instruct him to immediately send away all vessels anchored at Lintin, and at other places outside the port, and to take measures to prevent the importation of opium, and other contraband articles in future.

Captain Elliot again evaded the submission of any direct reply; and, on the 18th September, the Governor and Deputy Governor issued a third edict, observing that the Superintendent's inaction gave ground for supposing that he was unfit for his position, and ordering him once more to send the ships away, and to represent the matter to his Sovereign, and request him to prohibit them from again returning to China. "The Hong merchants," they said, "finally are commanded to report whether "the Superintendent is looking on with folded arms, or whether the delay arises from "obstinacy of those on board the receiving-ships. They are warned also not to risk "their fortunes and lives by negligence and indifference."

On the 19th September, also, they published for compliance another Imperial edict, which had been issued in consequence of the apprehension of opium smugglers in the province of Fuhkien, requiring the foreign officers and chief supracargoes at Macao to send away the offending parties, in any case in which they might receive information of the existence of contraband traffic. The Hong merchants, when communicating this edict, anxiously entreated Captain Elliot to acknowledge receipt of the orders of the Local Government, and to explain his position in regard to the opium trade.

The persistence of the Local Government, and the earnestness of the Hong merchants, convinced Captain Elliot that there was no immediate prospect of the withdrawal of the prohibition against the importation of opium; and he accordingly addressed the Governor on the 25th September, admitting that he personally was aware of the existence of an extensive illicit traffic, carried on by foreign ships outside the port of Canton, but pointing out that he only saw the papers of British ships, which actually entered the port, and that it was impossible for him to communicate to the King of

Enclosure 2 in the above letter: page 236 of the correspondence.

England information, which had been communicated to him in an unauthentic manner by the Hong merchants. He had, he said, in his ordinary intercourse with the Government, accepted that mode of communication, because he had been informed that it was in accordance with the customs of the Chinese Empire; but in the transmission of communications for the information of the King of England, it was in like manner just and necessary that due regard should be paid to the customs of Great Britain. The Governor of Fuhkien had recently announced his orders to the captain of a British ship under the seals of officers of the Fuhkien province, and if a similar mode of procedure were now adopted, he would have no difficulty in making the necessary representation. "The undersigned will conclude this address," he said, "by observing "that his gracious Sovereign has never yet been approached with representations "setting forth the existence of irregularities by the subjects of his kingdom upon "these coasts; and that His Majesty, therefore, can know nothing of any such "allegations, or of the pleasure of the Emperor in respect to them."

The line of argument adopted was ingenious, and even Chinese arrogance recognised the incongruity of a diplomatic communication to the King of England through the medium of the Hong merchants. The Governor and Deputy Governor, in reply therefore, while arguing that the Superintendent was well acquainted with the facts, and ought to have had no difficulty in making the necessary communication, admitted that there was some force in his contention that he was unable to "bring to "the knowledge of his King a plain and unauthentic document," and announced accordingly their intention of communicating their orders on this occasion through the Prefect (City Governor) and the Chief Military Officer of the Kwang Chow Department as a special arrangement.

Enclosure 3 in the above letter; page 237 of the correspondence.

These officers accordingly, on the following day (September the 29th), issued commands direct to the Superintendent, communicating to him the orders of the Governor and Deputy Governor in regard to the receiving-ships.

Enclosure 4 in the above letter; pages 237–240 of the correspondence.

In the orders of the Governor and Deputy Governor the substance of the four previous edicts was repeated, and the Superintendent was called upon to take immediate action against the opium ships at anchor, and to submit the necessary representation to his Sovereign, in order that the ships might be prohibited from again resorting to China. "If, after this time of issuing our commands," they said, in conclusion, "the receiving vessels again collect, as though we were not heard, and "continue to remain looking around them, it will be manifest that amendment finds no "place in the hearts of those concerned in them; and not only will they be no longer "borne with by the great Emperor, but by their own King also they will certainly be "subjected to trial. We cannot do otherwise than pursue them with the rigour of the "laws, and show forth to all the Celestial terrors. If the said Superintendent fail to "pay earnest obedience hereto, he also will draw upon himself investigation and "expulsion."*

Enclosure 5 in the above letter; page 240 of the correspondence.

Captain Elliot's acknowledgment of these orders was delayed in consequence of the absence of the Governor from Canton, but on the 17th November he wrote, assuring the Governor that his edict "conveyed directly" to him "under the seals of the Kwang "Chow Foo (City Governor) and Kwang Heep" (Chief Military Officer of the Kwang-Chow Department) would be at once communicated to England.

"He has," he wrote, "already signified to your Excellency with truth and plain-"ness that his Commission extends only to the regular trade with this Empire; and "further, that the existence of any other than this trade has never yet been submitted "to the knowledge of his own gracious Sovereign. He will only permit himself to "add, on this occasion, that circumstances of the kind described by your Excellency, "cannot be heard of without feelings of concern and apprehension; and he desires "himself to express an earnest hope that sure and safe means of remedying a "hazardous state of things may be speedily devised."

Letter from Captain Elliot to Lord Palmerston, dated 19th Nov. 1837, and annexed memorandum; pages 241–245 of the correspondence.

In a letter on the subject of these edicts, Captain Elliot informed Lord Palmerston that he was unable to ascertain the reason why the proposed legalisation of the opium trade had been postponed, but that the policy of suppression was then being energetically

* This official communication, which was to form the basis of Captain Elliot's representation to the King of England, was, it should be observed, made to him in the form of orders by two subordinate Chinese officers; the City Governor and the Chief Military Officer of the Kwang Chow Department issuing their own commands, and not merely communicating the orders of the Local Government. The Kwang Chow Foo in the East India Company's correspondence is called the City Governor, and in the later correspondence he is called the Prefect of the Department of Kwang Chow. The Kwang Hee or Heep is sometimes called the Military Attaché, or Aide-de-camp, and sometimes the Commandant of Police; and on this occasion he figures as the Chief Military Officer of the Kwang Chow Department.

prosecuted, with the result that the trade had been thrown, more directly than before, into the hands of Europeans.

"The vigorous proceedings," he wrote, "of the Provincial Government against the "native smugglers at the outside anchorages in the immediate neighbourhood of this "port, have had the effect of vastly increasing the traffic on the eastern coasts of this "and the neighbouring provinces (*sic*) of Fuhkien. Till within the last few months, "that branch of the trade never afforded employment to more than two or three small "vessels; but at the time of this despatch, and for some months past, there have not "been less than twenty sail of vessels on the east coasts; and, I am sorry to add that "there is every reason to believe blood has been spilt in the interchange of shot, "which has ever and anon taken place between them and the mandarin boats.

"The most grave result of the vigilance upon the spot remains to be described. The "native boats have been burned, and the native smugglers scattered; and the "consequence is, as it was foreseen it would be, that a complete and very hazardous "change has been worked in the whole manner of conducting the Canton portion of "the trade. The opium is now carried on (and a great part of it inwards to "Whampoa) in European passage-boats belonging to British owners, slenderly manned "with lascar seamen, and furnished with a scanty armament, which may rather be "said to provoke or to justify search, accompanied by violence, than to furnish the "means of effectual defence."

The higher officers of the Provincial Government were, he believed, perfectly aware of the extensive smuggling that was then carried on in European boats, and although up to that time, from motives of policy or self-interest, they had not attempted to interfere, it was impossible to count upon a continuance of their inactivity. The passage also of an article so valuable, in small and badly-armed vessels, offered a great temptation to smugglers and other lawless members of the native Chinese population; and an outbreak of piracy might induce the Government to undertake a second Ladrone (Pirate) war, directed against European smugglers and Chinese freebooters alike.

The value of the trade, conducted in so hazardous a manner, was, he said, about three-fifths of the total value of all imports; and the time had, in his opinion, arrived for the intervention of the British Government to protect commerce generally from interruption, and to secure the safety of British subjects in China. "The necessity," he wrote, "for such interposition is not, it may be said, immediately obvious. That "may be the case in England, and it would be an ungrateful task to throw it into "a stronger light. But at all events I shall simply say, that it seems to me the actual "state of things cannot continue to be left to the turn of events, without such deeply-"rooted injury to the national character in the estimation of this huge portion of "mankind, as it is painful indeed to reflect upon."

He recommended, therefore, that the Secretary of State should acknowledge the official communication, which had been made by the Governor and Deputy Governor of Canton, in regard to the opium trade, and should inform the Governor, in reply, that a Commissioner would be despatched to China, "to inquire in what degree the "evils complained of were justly chargeable to Her Majesty's subjects, and to consider "by what means it might be possible to establish all things upon a safe and satisfac-"tory footing;" and that a Special Commissioner, bearing an autograph letter from Her Majesty the Queen to the Emperor of China, should subsequently be despatched, with a strong naval escort, to the Island of Chusan, or to some other suitable place on the coast at a convenient distance from Pekin, to discuss the subject of opium with officers appointed for the purpose by the Chinese Government, and to endeavour to effect by negotiation the recognition of the trade; to obtain, if possible, some relaxation of the restrictions imposed upon commerce generally, and upon intercourse between the two countries; and to suggest some reasonable scheme for the control and government of British subjects in China. It was, he said, his plain duty to adhere to the principle that opium was a subject with which he had no concern; but a Special Commissioner could explain that more than half of the opium imported into China was produced in foreign territory; that it was impossible for the British Government either to prohibit or prevent the importation of foreign opium, or the importation in foreign ships of opium produced in British territory and exported to other countries, and that, as matters stood, it would be necessary to permanently maintain a naval force upon the coast of China to protect persons engaged in lawful trade from the possible consequences of measures taken against the illicit traffic; and arguments of this nature, if properly adduced, would, he thought, induce the Chinese Government to change its attitude, and legalise the trade.

"Upon the whole," he wrote, "it seems to me that the time has fully arrived when "Her Majesty's Government should justly explain its own position with respect to the "prevention or regulation of this trade; give its own counsels, or take its own "alternative course."

Two days after the despatch of this letter, Lord Palmerston's orders, of the 12th June 1837, reached Captain Elliot, instructing him that correspondence with the authorities through the medium of the Hong merchants could not be permitted, and that the superscription of his official communications as petitions must be discontinued.

Letter from Captain Elliot to Lord Palmerston, dated 29th Nov. 1837, and enclosures, pages 245-249 of the correspondence.

Captain Elliot accordingly submitted an address to the Governor with a superscription in Chinese, specially designed for the occasion, meaning, "presented before his high place," but the Governor would not receive it. As Captain Elliot reported: he opened and read it carefully, and after some consideration wrote upon it, with his own pencil, the words, "cannot be permitted," and directed the Hong merchants to return it with that remark.

Captain Elliot then prepared a second address, superscribed in the same manner, announcing formally the nature of his instructions, and requesting the Governor to permit in future, under the circumstances, direct official communication; and sent it, with the two Secretaries to the Commission, to the city gate, for delivery to the Commandant of Police. "Your Excellency," he wrote, "in an elevated station, and "practised in public affairs, will know that the undersigned does not dare to disobey "these strict commands of his Government, and that he could not presume to propose "any changes upon less urgent grounds than are now faithfully stated. If your "Excellency shall think fit always to forward your pleasure directly to the address of "the undersigned, through the Kwang Chow Foo and the Kwang Heep, as was lately "done, and will further consent to receive his respectful addresses in reply, without "the specification of the character 'Pin,' all difficulty will be removed."

The address was delivered to the Commandant, and was received by the Governor; and on the following day the Hong merchants brought an edict in reply, which was, they said, a courteous explanation of the reasons why the Governor was obliged to adhere to the mode of intercourse with foreigners, which had received the sanction of ancient custom. Captain Elliot declined to receive the edict; but delivered to the merchants a third address to the Governor, requesting that the City Governor and the Commandant of Police might be deputed to his residence to take a copy of the letter of instructions, which he had received from England. "According to the "regulations," as he said, "the undersigned cannot wait upon these officers at their "residences in the city, and he has therefore requested that they will visit him "here."

The Governor in his turn refused to receive this address, on account of the alteration in the superscription, and it was returned by the Hong merchants.

Captain Elliot then made over to the merchants an unsealed address to the Governor, with an intimation that they might deliver it or not as they pleased; and announced his intention of leaving Canton for Macao. In the address he announced that the orders, which he had received from the British Government, were peremptory; and that the Governor's determination to reject all addresses, not superscribed as petitions, and to refuse sanction to the arrangements proposed for the future conduct of official correspondence, must have the effect of interrupting all communications, until further orders should be received from England; and he therefore formally disclaimed all responsibility for the adjustment of any difficulties or disputes that might arise. The merchants hinted that the Governor might possibly concede the point of direct official intercourse, but could not sanction any change in the superscription of addresses; but Captain Elliot informed them that his orders were positive on both points and must be obeyed; and the negotiation ended.

On the 29th November Captain Elliot informed the British subjects resident at Canton that all official communication between him and the Governor had ceased; and on the 2nd December he proceeded to Macao.

"Direct written communications from the Governor to a person in my station," he wrote to Lord Palmerston on the 29th November, "your Lordship may be assured are "impossible of attainment, till Her Majesty's officers are here supported by the "presence of force; and then it is certainly probable that the point may pass without "much difficulty." He considered however, that the transmission of attested copies of the Governor's edicts, by the City Governor and the Commandant of Police would, under the circumstances then existing, be a sufficiently satisfactory mode of com-

Extract from a letter from Captain Elliot to Lord Palmerston, dated 4th Dec. 1837; page 249 of the correspondence.

munication, and would moreover be compatible with the terms of Lord Palmerston's despatch of the 12th July 1836; and in another letter, written from Macao five days later, he expressed an opinion that the peaceful establishment of direct official intercourse upon these conditions was "no longer of questionable or difficult accomplishment," and would be at once achieved by the transmission in a ship of war to the mouth of Peiho of a letter, written by the Secretary of State under Her Majesty's orders, to the Cabinet at Pekin. "The principle" he wrote, "that officers were not "to reside in the Empire, has been formally renounced by the Emperor himself, and "that was the main obstacle; the clearest admission of my right to direct sealed "communications with the Governor, upon the ground of my official character, has "been conceded; an official mistake in an edict describing me to be a merchant, has "been publicly acknowledged and corrected; facilities, (especially upon the plea that "I was an officer, and involving a direct official intercourse with the mandarin here,) "have been accorded; striking proofs of the disposition to devolve upon me in my "official capacity the adjustment of all disputes, even between Chinese and my own "countrymen, have been afforded. On one occasion the Provincial Government has "already communicated with me in a direct official shape; and upon my late departure "from Canton, it was easy to perceive that the Governor was prepared to fall entirely "into that course, upon the condition that I should waive the proposed change in the "superscription of my addresses."

Letter from Captain Elliot to Lord Palmerston, dated 7th Dec. 1837, and enclosures; pages 250–252 of the correspondence.

On the 20th November 1837, further orders were issued by the Governor and Deputy Governor of Canton, in regard to the opium receiving-ships, in consequence of the receipt of an Imperial edict upon the subject. "The anchorage of foreign "ships in the inner seas," ran the Imperial edict, "and their combining with natives, "to introduce what is contraband, are the most aggravated evils now existing in the "province of Kwang-tung. The Governor and his colleagues, aforesaid, must "faithfully and strictly make examination and clearly ascertain, whether, since they "have issued these orders, the said foreign Superintendent has or has not paid "obedience to them; and whether the receiving-ships have or have not taken their "departure; they must require the ships, one and all, to return to their country, and "must not suffer them to linger for a moment. If they dare to suffer gradual "encroachment, and to let the matter rest, at a future day, when I, the Emperor, on "inquiry hear of it, or am by anyone informed thereof, the said Governor and his "colleagues alone will I hold responsible."

The Governor and Deputy Governor accordingly issued orders, to be enjoined upon Captain Elliot, to the effect that he must send away the receiving-ships within a month, and report the fact of their departure, for the information of the Local Government, and for communication to Pekin. "If," they said, "they (the ships) dare again, in any "measure, to linger, then the kindness and tenderness of the Celestial Empire having "been carried to the utmost, and there being no room left for additional favour, it "will remain only (to) display the Celestial terrors, and to make apparent the glory "of the established laws. We shall have to report plainly to the great Emperor, that "the merchant ships may be denied permission to open their holds, and that grasping "the laws, we may pursue with them the receiving-ships. And further, seeing that "the said Superintendent, in the discharge of his official duties, sits hand-bound, "idly looking on at the unrestrained and illegal practices of depraved foreigners, "even kicking against our commands, and resisting the Imperial pleasure, we shall "find it difficult to believe that he is not guilty of the offence of sheltering and giving "license to these illegalities. We will assuredly proceed to expel him, and drive him "back to his country." The Hong merchants also were threatened with degradation and punishment, if the ships were not removed within the month.

The interruption of official communications prevented Captain Elliot from sending any reply to these orders. He forwarded, however, a copy of the edict for Lord Palmerston's information on the 7th December, and suggested that the menaces to stop the trade, and expel him from the Empire, strengthened the arguments, by which, in his letter of the 19th November 1837, he had advocated "immediate and earnest approaches" to the Court at Pekin by Her Majesty's Government. He added also, that the outlook was so uncertain, and the intentions of Government so inscrutable, that it was in his opinion highly necessary that a small naval force should immediately be stationed in the China Seas, for the protection of British interests.

Captain Elliot's proposal, for the appointment of a Special Commissioner, amounted to a recommendation for the despatch of another Mission to China, and Her Majesty's Ministers were not prepared to attempt another experiment of this kind, or to interest themselves directly in behalf of the persons engaged in the opium trade.

Lord Palmerston, therefore, in a letter dated 15th June 1838, communicated the orders of the British Government upon the proposal, and upon the subject of Captain Elliot's communications with the Provincial Government at Canton.

Letter from Lord Palmerston to Captain Elliot, dated 15th June 1838; page 253 of the correspondence.

"Her Majesty's Government," he wrote, "have had under their consideration your "despatches of the 29th November and 4th December 1837, in which you report your "proceedings in execution of the instructions conveyed to you in my despatch of last "year, relative to the manner in which you should send communications to, and receive "them from, the Chinese authorities at Canton. I have to acquaint you that Her "Majesty's Government approve the course which you have pursued: and as the "Chinese authorities persisted in their refusal to communicate with you in the manner "required, Her Majesty's Government consider that you were perfectly right in "withdrawing from Canton to Macao.

"With respect to the smuggling trade in opium, which forms the subject of your "despatches of the 18th and 19th November, and 7th December 1837, I have to state, "that Her Majesty's Government cannot interfere for the purpose of enabling British "subjects to violate the laws of the country in which they trade. Any loss, therefore, "which such persons may suffer in consequence of the more effectual execution of the "Chinese laws on this subject, must be borne by the parties, who have brought that "loss on themselves by their own acts.

"With respect to the plan, proposed by you in your despatch of the 19th November, "for sending a Special Commissioner to Chusan, to endeavour to effect some arrange-"ment with the Chinese Government about the opium trade, Her Majesty's Govern-"ment do not see their way in such a measure with sufficient clearness to justify "them in adopting it at the present moment."

No regulations existed for the preservation of the peace, or the maintenance of discipline among the British seamen at Whampoa, and during the years that followed the abolition of the East India Company's monopoly mutinous outbreaks upon the ships appear to have been frequent. A fruitful cause of these disturbances was the existence of an idea among the seamen, that corporal punishment could not lawfully be inflicted by order of any captain in the merchant service; and a serious disturbance, which occurred in September 1837, forced the subject upon Captain Elliot's attention. The disturbance was quelled with tact and firmness by Captain Elliot in person; and he then took steps to establish a system for the preservation of order, and to make it publicly known that merchant captains had a legal right to enforce subordination on board of their ships by any punishment, corporal or other, which was not at variance with custom.

Letter from Captain Elliot to Lord Palmerston dated 18th April 1838, and enclosures: pages 294–299 of the correspondence.

He accordingly promulgated regulations, by which the senior commander of the Company's late maritime service, who happened to be at Whampoa, was charged with the duty of checking any riot or insubordination on any British ship with a European crew, and was invested with authority to try and punish offenders; and the senior commander of the ships, at the port, in the Indian trade, was invested with similar responsibility and authority in respect to vessels with lascar crews.

The Chinese raised no objection; and the regulations appear to have been suited to the circumstances, and to have worked well. An outbreak which occurred at Whampoa, subsequent to their introduction, in January 1838, was suppressed by the senior officer of the Company's late service, in the capacity of port magistrate; and two British seamen, who had been mutinous, were tried and flogged, apparently with the best possible result upon the conduct of the seamen.

The regulations, however, as was subsequently pointed out by the Law Officers of the British Crown, were an interference with Chinese sovereign rights, which could only be justified either by treaty or by implied permission from usage; and were, moreover, of such a nature, that they could only be made and issued by Her Majesty the Queen under the Act 3 & 4 Will. IV. c. 93. Lord Palmerston accordingly directed Captain Elliot, in March 1839, to endeavour to obtain the written approval of the Governor of Canton to the regulations, in order that proper steps might be taken, to give them validity, in accordance with the Act in question.

Letter from Lord Palmerston to Captain Elliot, dated 23rd March 1839; pages 317 and 318 of the correspondence.

Affairs had reached a crisis long before Lord Palmerston's letter reached Canton, and no action was taken upon it; but the orders issued offer a further illustration of the anxiety of the British Government to avoid giving offence to the Chinese, and also, it may be said, of the extreme difficulty that existed in maintaining friendly relations between the two countries, one of which felt itself bound by the principles of international law, and the other utterly refused to recognise any law, or principles, but its own.

Enclosure in a letter from Captain Elliot to Lord Palmerston, dated 5th Feb. 1838; pages 254-258 of the correspondence.

On the 30th December 1837 the Governor of Canton and the Deputy Governor and Superintendent of Customs submitted a joint memorial to the Emperor upon the measures they had taken to suppress the trade in opium, and the degree of success with which they had been attended. Chinese jurisdiction, they said, extended over the inner and outer seas to the Ladrone Islands, beyond which was "the wide and boundless "ocean, the black water of the foreign seas," over which China had no control. The receiving-ships had been driven from Kumsingmoon and the "inner seas" (or the inlets of the mainland), but were still anchored at Linton and other places in the "outer seas," within the Ladrone Islands; and only one of them, a Dutch ship, had complied with the orders issued, and sailed away from the coast. The number of receiving-ships, as ascertained by inquiry, was twenty-five, most of which were British vessels from India, but there were also others under the American, French, Dutch, Spanish, and Danish flags, "of each from one or two, to three or four." Stringent orders for the instant departure of the ships had, they said, been enjoined upon Captain Elliot and the foreign merchants, but they had not up to that time complied, and had made excuses to gain time; and the advisability of a temporary suspension of trade was accordingly suggested. "If," they wrote, "they (the foreigners) be now intimidated "by the stoppage of trade, they will probably no longer allow the receiving-ships to "remain, lest by such contumacious conduct they effectually damage their means of "livelihood."

In the meantime they had requested the Naval Commander-in-Chief to expel the receiving-ships from the outer seas; and had taken steps to cut off their supply of provisions. "We, your Ministers," they continued, "have for some time past made "seizure of opium dealers and smugglers of every description, without mercy, in order "to prevent the exportation of sycee silver and the importation of opium, and thus "to put a stop to this contraband traffic. . . . . Your Ministers have now "been earnestly engaged in these measures for one year. They dare not yet say "that their efforts have had the full effect to be desired. But with regard to the "existing state of things in the provincial city, it may be observed, that the price of "sycee silver is at present very low; and that opium, one ball of which, on board "the foreign vessels, formerly cost the traitorous natives (nations) about 30 dollars, "brings now only from 16 to 18 dollars. Of the smuggled silver, too, that has been "seized, a large portion has been foreign money, which would seem to imply that to "export silver is now comparatively difficult."

Smugglers arrested had, they said, been severely punished; the shops of opium dealers had been closed; the apprehension of persons frequenting them had been ordered; and although some discontent had been created, and scandal-mongers* had not hesitated to charge them even with bribery, and the subordinate civil and military officers with favouritism and corruption, while other over-anxious individuals had complained of the dulness of trade and the bad prices realised for tea and silk, the policy adopted, if pursued with vigour and firmness for a long time, could not, in their opinion, fail to be eventually "extremely beneficial."

Extract from a letter from Captain Elliot to the Foreign Office, dated 18th May 1838; page 253 of the correspondence.

In January 1838 a move was made against the European smugglers. The boat of a British subject, Mr. Just, a watchmaker at Canton, was searched by some Customs House peons in the river, and three chests of opium were found in it. This, as Captain Elliot reported, was "the first instance for many years of a searching visit on board European boats;" and the proceedings were certainly not calculated to carry much conviction to the British community of the sincerity of Chinese intentions. Mr. Just, it appears, might have settled the affair at once by a bribe of 2,000 dollars to the officer making the seizure; but he would not give more than 1,000. As the knowledge of the seizure spread, the number of officials requiring bribes increased, and the demand for hush-money rose rapidly to 6,000 dollars, and was said, by Captain Elliot, on the 18th January 1838, the date upon which he reported the case, to be then rising. The exact manner in which the matter was adjusted does not appear; but as no proceedings were taken against Mr. Just, and the European smugglers were not intimidated, a compromise of some kind was evidently effected.

Letter from Captain Elliot to Lord Palmerston, dated 20th April 1838, and enclosure; pages 299-301 of the correspondence.

In February and March the number of boats belonging to or employed by British subjects in the illicit traffic between Lintin and Canton increased largely: and the deliveries of opium were frequently attended with conflicts† of firearms between the

* "Some there are," they wrote, "babbling scandal-mongers, who represent that we, your Ministers, "if besought by those, who bring reach (? peace) offerings in their hands, are not unwilling to accept gifts."

† I have stated the facts as officially reported by Captain Elliot. Mr. Jardine, in his evidence before the Select Committee of the House of Commons upon the China Trade in 1840, said that Captain Elliot's statement was, in his opinion, "overrated," and that he did not believe there had been a single life lost, or a single individual wounded, in these conflicts.—(Q. 1571.)

boats and the Chinese preventive vessels. It does not appear that there was any loss of life on either side; but the state of affairs was considered by Captain Elliot to be so serious, that in the month of March he made another attempt to induce the Governor to make such concessions on the "communication" question, as would permit him to return to Canton and control his own countrymen.

He prepared, accordingly, a statement, representing that months must elapse before he could obtain instructions from his own Government in regard to his future correspondence, and that the absence of responsible authority over his countrymen, during this time, might lead possibly to international complications; and suggesting that under the circumstances the Governor should forward, for the information of the British Government, a formal explanation of the reasons why addresses from an officer of Captain Elliot's rank could only be submitted as petitions, and should allow him in the meantime to submit addresses, not petitions, to the City Governor and the Commandant of Police, and to receive the Governor's orders direct from them. "Between these honourable officers and Elliot," he wrote, "there need be no super-"scription on the addresses except the names and titles of each officer; because it is "recorded, in a memorial to His Imperial Majesty, that Elliot also is an officer of the "fourth rank in his own nation." This statement he made over to the Chinese Secretary, Mr. Morrison, at the beginning of April, for delivery to Howqua, the senior Hong merchant, with an intimation that he might show it to the Governor if he thought fit. Howqua took the statement, but returned it in a few days to Mr. Morrison, with a message to the effect that the Governor had seen it, but could not accede to such an arrangement.

"I was sensible," wrote Captain Elliot to Lord Palmerston, "that the present state "of things at Canton could only subsist as long as the Governor could venture to "appropriate a large share of the bribes, by which the system is upheld; and therefore, "I looked for no other result at his hands. . . . . Should any serious disaster "ensue, threatening the lives of Her Majesty's subjects engaged in these pursuits, "(and, in my own judgment, this result is perfectly probable), I shall not fail to found "the strongest remonstrances against such extreme measures upon the Governor's "rejection of these last proposals. That circumstance would fully justify a representa-"tion to the Court, that the irregularities leading to the mischief were the consequence "of his Excellency's manifest and disgraceful corruption; and that, therefore, he alone "was responsible for all those evils, which might have been prevented, if he had been "honest enough to do his own duty, or to permit me to do mine."

In the month of April, a Chinese was executed by strangulation, outside the walls of Macao, for the crime, as stated in an inscription of his sentence, of "traitorous "intercourse with foreigners, and for smuggling opium and sycee silver." This violent measure, which, as Captain Elliot reported, was the first proceeding of the kind in that part of the Empire, was said to have been carried out by the special command of the Court; and the unusual place of execution, and the terms of the sentence, showed plainly that it was intended to warn, and to intimidate, the foreigners.

After April, however, there was a lull, and no further action was taken against the Europeans for some months. The smuggling within the river continued and increased; and, notwithstanding the Macao execution, it was currently reported that the Governor of Canton, or some member of his family, had four boats engaged in it. There was, it must be added, some reason to suppose that participation by Government officers in the traffic had been sanctioned, as a matter of policy, by the Imperial Government, with the object of ascertaining the manner in which, and the persons by whom, it was conducted, but Natives as well as Europeans, were distrustful of the good faith of such proceedings, and the Governor's son was publicly charged in a Chinese placard with being improperly concerned in the business.

Evidence of Messrs. Inglis and Jardine before the Select Committee of the House of Commons upon the China Trade in 1840.

The question of the Hong merchants' indebtedness came once more to the front about this time. The introduction of free trade on the part of Great Britain produced no change in the Chinese commercial system. By the regulations of the Government, foreign merchants were limited, as before, in their dealings in the principal staples of trade to the recognised Hong merchants; and although the orders, issued by Governor Loo in November 1834, show that there had been some increase of unlicensed trading by Chinese shopkeepers, the Hong monopoly appears to have been fairly well maintained.

Memorial to Lord Palmerston, dated 21st March 1838, forming Enclosure 2 of a letter from Captain Elliot to Lord Palmerston, dated 20th March 1838, and pamphlet entitled "The Chinese Security Merchants in Canton."

The merchants traded as before, in separate interests, but they were held responsible, as a body, for the dues of Government, and for liabilities to foreigners contracted by

and their Debts," forming Enclosure 5 in the same letter; pages 260–262 and 276–291 of the correspondence.

any one of their number; and the proposed relaxation of the principle of collective responsibility, which was sanctioned in 1830, at the instance of the Select Committee of supracargoes, does not seem to have been brought into operation.

At the commencement of 1837, the number of merchants or firms was 13; and one of the 13, the Hingtae Hong, failed in that year for more than 2,200,000 dollars, the greater part of which was due to British subjects. Some of the other merchants, also, were supposed to be in difficulties, and one of them, Kinqua, was hopelessly involved.

Correspondence between the Local Government, Hong merchants, and foreign merchants, relative to the affairs of theHingtae Hong forming Enclosure 3 in the letter from Captain Elliot above quoted; pages 262–275 of the correspondence; and letter from Captain Elliot to Mr. Backhouse, dated 20th April 1838; pages 307 and 308 of the correspondence.

The creditors of the insolvent Hong applied to the Governor, in April 1837, to direct a settlement of their claims by the merchants as a body, in any manner he might think proper; and the Governor immediately ordered the merchants to make an examination of accounts, and ascertain what sums were really due, and to devise some arrangement for their liquidation. Some delay occurred, and repeated applications were made by the creditors, which produced further orders by the Governor to the merchants; and in the month of July a committee, consisting of three of the foreign creditors (two Englishmen and one American), and the three senior Hong merchants, was formed to examine the accounts of the insolvent firm, and finally decide the amount due to each claimant. Mr. Dent, one of the English members, was appointed chairman. Reductions amounting to 477,000 dollars were made by the Committee in the claims put forward; but the liabilities of the firm were finally assessed at 2,261,438 dollars, of which 2,179,386 were due to British subjects.

The manager of the Hingtae Hong and his brother were put into prison as a punishment; and the merchants as a body were required to settle the liabilities of the firm, on the understanding that they might recoup themselves, in the usual manner, by additional impositions on the trade. The merchants at first proposed a settlement in fifteen years; and this led to further appeals to the Governor, who in December 1837 declared formally that the question was entirely distinct from that of the opium ships, and that the debts would be paid to the uttermost farthing, without reference to any measures that might be taken against the ships. He would not, however, promise to reduce the period, proposed by the merchants, for repayment of the debts, and informed the creditors that the matter was under consideration. Later in the month, the Commissioners of Finance and Justice reported that twelve years would be a suitable period; and in March 1838 the Hong merchants, of their own accord, agreed to fix the term at nine years.

Memorial to Lord Palmerston, dated 21st March 1838; pages 260–262 of the correspondence.

The European creditors would not accept this offer, partly because they thought the term was too long, and partly because some, if not all of them, were of opinion that the settlement should cover the liabilities of the other merchants, and that the opportunity should be taken to bring the question of Hong indebtedness to a definite issue.

On the 21st March 1838, therefore, a public meeting of British merchants was held at Canton, and a memorial to Lord Palmerston was adopted by several of the leading firms, including most of the creditors of the Hingtae Hong, setting forth the grievances to which they were subject, owing to the conditions under which the trade was conducted, and to the inefficiency and impoverishment of the Hong merchants; urging that the Chinese Government, which insisted upon confining the foreign trade to a few merchants, was bound to arrange that those merchants should be men of sufficient capital and property for the position; and praying that the British Government would make a representation to the Cabinet at Pekin to facilitate the adjustment of all claims then outstanding, and to procure, if possible, the adoption of some arrangement for the prompt repayment of any debts, that might be thereafter contracted.

Enclosure 1 in Captain Elliot's letter to Lord Palmerston, dated 29th March 1839; pages 259 and 260 of the correspondence

This memorial was forwarded by the chairman of the meeting to Captain Elliot for transmission, with a request that he would give to the memorialists his cordial support.

Letter from Captain Elliot to Lord Palmerston, dated 28th April 1838, and enclosures; pages 301–307 of the correspondence.

The creditors of the Hingtae Hong, however, had carried on their correspondence regarding the settlement of the liabilities, with the Hong merchants and the Governor direct, without the intervention of the British Superintendent; and the principal creditors, Jardine, Matheson, and Company, did not subscribe the memorial to Lord Palmerston, and made another application to the Governor on their own account, on the day that the memorial was signed, requesting him to issue orders to the merchants to make a more favourable settlement. A similar application was made by Turner and Company; and Dent and Company and other creditors informed the Governor that, although they had referred the matter through the British Superintendent to their own

Correspondence between the Local Government, Hong merchants, and foreign merchants relative to the affairs of

Sovereign, they were prepared to gratefully receive any portion of their claims, of which he might be pleased to order payment.

The result of these divided counsels might have been anticipated. The creditors of the Hingtae Hong continued their negotiations with the Hong merchants, and although the Governor, on the 11th April in reply to three applications made by the creditors refused to order the merchants to reduce further the time proposed for liquidation, a settlement was eventually effected in November 1838, providing for the repayment of the Hingtae debts in eight and a half years without interest, and for the adjustment also of the debts of Kinqua, who had not been officially declared insolvent, in ten years with simple interest at six per cent.

The memorialists had no new grievance to complain of; and as the liabilities of the Hingtae Hong were said, both by the creditors and by Captain Elliot, to be the result of *bonâ fide* commercial transactions, and to differ in this respect from debts incurred by Hong merchants, on former occasions, in consequence of speculation or extravagance, the Governor appears to have treated the foreign creditors of the insolvent firm fairly enough. The existence of the Hong monopoly was no doubt a genuine grievance, which was greatly aggravated by the insolvency or impoverishment of any of the monopolists; and the manner in which the collective responsibility of the merchants was enforced, and any debts, that had been contracted, were paid, was, as Captain Elliot well said, "a device for saddling the foreign commerce with all the heavy consequences "of most imprudent trading on both sides; with all the losses occasioned by incapacity "or extravagance upon the part of the Hong merchants; and . . . . . with all "the squeezes, which the Local Government *could*, upon any pretext, fasten upon the "Cohong." The extra duties imposed upon the trade, to provide funds for the repayment of the debts of the Hingtae firm and Kinqua, were said by Captain Elliot to amount approximately to a million of dollars per annum.

The Company's supracargoes in 1829-30 had pressed for the abolition of the principle of collective responsibility for these reasons; but the system had its advantages for the individual trader; and an occasion, when private interests were so much concerned, was not really a favourable one for raising the general question of trade disabilities.

Captain Elliot, however, on receiving the memorial of the 21st March, with an account of the proceedings taken up to that time, for the recovery of the debts of the Hingtae firm, informed the memorialists that the matter would be brought to the notice of Her Majesty's Government; and expressed an opinion that the "determination "of a just period," for payment of the debts, "had better be left open for arrange-"ment" between the Governments of Great Britain and China, and that "the creditors "would be taking a sound course, both as respects their own, and the permanent "interests of the trade, in steadily declining to have any further concern with these "matters, than to receive the whole, or such instalments, of their claims upon the "Chinese Government, as the Provincial authorities *might* think fit to pay."

He then forwarded the memorial to Lord Palmerston, and transmitted at the same time a historical memorandum published at Canton by a gentleman, who had formerly been in the Company's service, describing the conditions under which foreign trade was conducted at Canton, and the relations which had existed between the Hong merchants and the East India Company and British free traders, from the commencement of the 18th century up to the date of the memorial. "This first occasion," he wrote, "of such a crisis as the present, seems to me to be a necessary and a favourable con-"juncture for combining just demands for prompt payment, with earnest efforts to "establish our commerce in this Empire on a sounder basis." The free traders, he pointed out, were not in a position to sustain a long deprivation of large portions of their trading capital and were without the means, which the Company possessed, of maintaining a financial equilibrium at Canton; and some considerable modification of the Chinese monopoly was, in his opinion, necessary to prevent the frequent recurrence of financial disasters of the same nature, as that then complained of. He recommended, therefore, that a demand for the money due to British merchants should be made upon the Chinese Government by the Special Commissioner, whose appointment he had previously advocated; and that, as soon as the question had been satisfactorily settled, the Commissioner should point out that the Chinese regulations were unsuitable to the altered conditions of British commerce, and should remain in China "to maintain secure and becoming public communications, and to prevent serious

"cause of dispute between the two nations," until such time as the Chinese Government should itself propose necessary modifications of the existing system.

"All these considerations . . . . ." he wrote, "lead me to the conclusion that to "shape our course, and systematically to persevere in it in such a way as will cast "the undivided task of proposition upon the Chinese Government, is a policy which "is deserving of your Lordship's attention."

Letter from Captain Elliot to Lord Palmerston, and enclosures, dated 2nd Dec. 1838; pages 321 and 322 of the correspondence.

In November 1838, the creditors of the Hingtae Hong, submitted a second memorial to Lord Palmerston, through the Superintendent, informing him of the settlement they had made in regard to the debts then outstanding, which had formed the chief object of their first memorial, but urging the necessity of intervention by Her Majesty's Government to provide for the prompt liquidation of debts, that might be incurred in the future, both in the interests of British subjects and of the Hong merchants themselves. A representation to the Chinese Government upon the subject of the commercial system might, they suggested, have the effect of reducing the exactions and demands which were made upon the merchants by the authorities at Canton.

Letter from Captain Elliot to Lord Palmerston, dated 8th January 1839; pages 340-342 of correspondence.

In regard to this memorial, Captain Elliot, in January 1839, submitted some further observations for Lord Palmerston's consideration. A system of free trade on the side of Great Britain with an association of Chinese monopolists could not, he said, fail to be an unfortunate arrangement; but he concurred with the view taken by the Select Committee of the Company's supracargoes in 1829–30, and thought that even under the altered conditions of British trade, the interests of the nation would be best served by an abandonment on the part of China of the so-called national guarantee for the repayment of the Hong merchants' debts; and as there was no immediate prospect of the appointment of a Special Commissioner, to negotiate with the Chinese Government in regard to the opium trade and other matters, he suggested that a direct application should be made by the British Government to the Court at Pekin upon the subject.

"I would," he wrote, "submit that the altered state of circumstances on our side "should be plainly explained, and that a request should be made for the very "considerable extension of the number of persons licensed to trade with us, Her "Majesty's Government upon its part consenting to give up all direct claim upon the "Chinese Government for the future payment of foreign debts on a single condition, "namely, that special orders should be issued by the Emperor to the authorities at "Canton to apprehend and punish any native debtors, who attempted to defraud their "foreign creditors."

Letter from Lord Palmerston to Captain Elliot, dated 23rd March 1839; page 318 of the correspondence.

The British Government, it appears, was at first disposed to take action for obtaining redress from the Chinese Government of the grievances complained of in the first memorial submitted by the merchants; but it was finally decided to wait until the necessity for intervention should be further demonstrated. The Naval Commander-in-Chief in the East Indies had been ordered to visit Canton; and it was hoped that his appearance on the scene might bring about some amicable adjustment of the question.

Letter from Lord Palmerston to Captain Elliot, dated 27th Feb. 1839; page 317 of the correspondence.

In February 1839, however, news of the settlement, which had been arrived at, reached England; and Lord Palmerston then wrote to Captain Elliot, to inquire how the matter stood, as it appeared from statements in Canton newspapers, that the memorialists had effected an arrangement with the Hong merchants upon terms not materially different from those against which they had protested. "I request," he wrote, "that you will inform me whether this statement "is true; and if it is, I have further to instruct you to impress upon the British "merchants resident in China that it is of great importance to their own interests, as "well as to the character of this country, that they should not on any future occasion "hastily apply to the British Government to found a representation to the Chinese "Government in their behalf upon principles which they themselves may be disposed "to abandon before such representation could reach the Chinese authorities."

No orders appear to have been passed by Her Majesty's Government upon the suggestion made by Captain Elliott in January 1839, for the submission of an application to the Court at Pekin, in regard to the Hong monopoly system; and the Hong merchants and their debts do not seem to have formed the subject of any further correspondence with the officers of the Chinese Government up to the outbreak of hostilities in 1840.

Letter from Lord Palmerston to Captain Elliot, dated 2nd Nov. 1837, and enclosure; pages 192-194 of the correspondence.

The standing instructions, in respect to China, of the Naval Commander-in-Chief in the East Indies were revised in September 1837; and the Commander-in-Chief was informed that Her Majesty's Government considered it desirable that one or more of the ships under his orders should visit the China station as frequently as possible, and

should remain there as long as might be consistent with the demands of the service elsewhere, to afford protection to British interests, and give weight to the Superintendent's representations, in any case in which a British subject might have just cause of complaint against the Chinese authorities, and to assist in the maintenance of order among the crews of the British merchant ships at Canton.

He was, however, requested to admonish the officers commanding any ships thus sent, to be careful to prevent the officers and men, belonging to the ships, from offending the prejudices, or violating the laws and customs of the Chinese, and to studiously respect the regulations of the Chinese Government as to the limits beyond which foreign ships of war were not allowed to pass, except in a case of emergency, in which a demonstration, or the actual employment of force, might be urgently and absolutely necessary for the protection of the lives and property of British subjects.

The Commander-in-Chief was at the same time instructed to take the earliest possible opportunity of visiting China, if possible in a line of battle ship, to meet and confer personally with the Superintendent. "You will, however," it was said, "constantly "bear in mind that while on the one hand it is useful that the Chinese should be aware "of the nature and extent of Her Majesty's naval power, it is on the other hand most "important that you should avoid any proceedings, which might inspire the Chinese "with an apprehension that this naval power is likely to be employed in unprovoked "hostility against them."

In pursuance of these instructions, Sir Frederick Maitland, the Naval Commander-in-Chief, visited China, with Her Majesty's ships "Wellesley" and "Algerine," arriving off Macao on the 13th July 1839. Captain Elliott there joined him; and the ships then proceeded to Tong-koo Bay, an anchorage to the southward of the Bocca Tigris, at a distance of about seven leagues.

Letters from Captain Elliot to Lord Palmerston dated 7th and 10th Aug. 1838, and enclosures: pages 308-317 of the correspondence.

A few days after the Admiral's arrival, the Chinese Magistrate of Macao addressed an order to the Superintendent, but Captain Elliot was not prepared to take orders from an officer in his position; and returned the communication unread, with a note to the effect that he would attend to it as soon as it was put in proper form. The Governor then issued an edict in the usual manner to the Hong merchants, which was forwarded by them to Tong-koo Bay; but this document also was returned unopened by Captain Elliot, with a message to the effect that he could not receive any communication made in a manner at variance with the instructions of the British Government.

It was necessary, however, to announce the objects of the Admiral's visit, and with Sir F. Maitland's approval, Captain Elliot proceeded to Canton to make the announcement on the 25th July. On arrival there, on the 29th July, he sent the Secretary and Mr. Morrison, the Chinese Secretary, with an explanatory address, to the city gates, purposely leaving the paper open to avoid the difficulty of the superscription, and instructed them to deliver the address to a mandarin. The address was received, and was conveyed to the Governor by the Commandant of Police, but was returned to Captain Elliot the same evening by the three senior merchants, with a message from the Governor to the effect that his orders from the Emperor were imperative, and that he could not take the address, unless it was submitted in the form of a petition. As a solution of the difficulty, the merchants proposed, in accordance (as they said) with the Governor's orders, that Captain Elliot should receive an "official address" from the Governor, stating that the three senior mechants were, in fact, mandarins, and that he ought not therefore to object to receive papers addressed to them for communication. Captain Elliot indignantly repudiated this suggestion, and announced his intention of returning to Macao, as the Governor had not thought fit to receive his explanation of the peaceful object of the Admiral's visit.

In the meantime, on the 28th July, a passage boat, which was on its way to Canton from Hong Kong, with a captain of a British ship, there anchored, and other passengers, was chased by two mandarin boats, and was fired at by the fort at the Bocca Tigris and compelled to heave-to. The boat was then boarded by an interpreter from one of the mandarin boats, who inquired whether "Admiral Maitland, or any of his "soldiers, women, or man-of-war's men were on board," as, "if so, they would not be "allowed to pass up the Bogue." The inquiry was answered in the negative; and one of the passengers asked if they wanted to seize opium, but this the interpreter denied. The boat was then allowed to proceed, but at Tiger Island she was again fired at and boarded, and the same inquiry was made.

Captain Elliot, on hearing of this incident, sent for the senior merchants and attempted to obtain from them an official disavowal by the Governor of any intention to insult the Admiral; but verbal protestations only were forthcoming, and he

accordingly proceeded to Tongkoo, and reported the occurrence to Sir Frederick Maitland.

Sir Frederick determined to demand a formal disavowal of the attack thus made upon him, and the insult offered to the flag, and moved at once to Chuenpee, near the Bocca Tigris, with the two ships of war, and H.M.S. "Larne," which had been placed on duty at the China Station. On arrival at Chuenpee on the 4th August, he sent the captain of the flag-ship to the Chinese war junks, with a letter addressed to the Governor of Canton. The Chinese were unwilling to receive the letter, though they did not actually refuse to do so; but while negotiations were proceeding a letter was received from Kwan, the Chinese Admiral, addressed to Sir Frederick Maitland, in which he inquired the reason for the movement of the ships of war, and explained that the Governor would have been glad to accord him an interview, were it not for the regulations of the Chinese Empire, which did not permit "Commanders-General of "vessels of war" to enter the port, and that Captain Elliot's communications had been refused, merely because he had not submitted them as petitions in the customary manner.

Sir Frederick replied to this letter on the 5th August, stating that he had come to demand an explanation of the insult offered to the British flag, and that the movement of the ships was not connected with Captain Elliot's affairs, and requesting that officers might be sent to discuss the matter.

The Chinese Admiral sent at once the captain of a war junk and another officer, who disavowed in writing any intention to insult or annoy the Commander-in-Chief, and gave an assurance to the effect that the persons, who had fired on and boarded the passage boat, had acted without orders, and that they would be punished. Sir Frederick accepted this apology; said that, as no offence was intended, he did not wish anyone to be punished, and announced his intention of returning at once to Tongkoo, and of remaining there until the wind was favourable for his departure from China. He explained that frequent visits from British ships of war might be expected in future, as the Company had ceased to trade, and it was the custom of the British nation to look after its subjects in foreign countries, and see that they were not insulted and that disturbances did not take place among them. The Chinese officers made some complaint regarding the conduct of British subjects; and Sir Frederick informed them that merchant ships were subject to the civil authority, and referred them to Captain Elliot; and after an exchange of civilities the officers took their leave.

Letter from Captain Elliot to Lord Palmerston, dated 13th Oct. 1838, and enclosures; pages 319 and 320 of the correspondence.

The satisfactory relations thus established continued up to the time of the Commander-in-Chief's departure. A Chinese officer visited the "Wellesley" in August to inquire when the ships would depart; and Sir Frederick, on the 29th of that month, wrote a letter to the Admiral repeating in handwriting the explanation he had already verbally given of the objects of his visit, and announcing his intention of sailing as soon as the wind should be favourable.

The Admiral sent a civil and courteous reply; apologised for his inability to infringe the rules of his country by paying him a visit; and informed him that he might remain in the "outer seas" for several weeks longer, if he felt so disposed. Officers also were sent by the Admiral on several occasions with complimentary messages to the English flag-ships.

Sir Frederick Maitland left China at the end of September 1838. No cause of offence was given by the officers or men of Her Majesty's ships, and no complaint was made by the Chinese; and Sir Frederick, before leaving, expressed to the Admiral his sense of the courtesy and civility with which he had been treated. The presence of the ships, however, did not induce the Governor to modify his attitude, or make any concession; and the Commander-in-Chief does not appear to have intervened in the matter of Captain Elliot's relations with the Government, or to have taken any action in regard to the river traffic in which many of the foreigners at Canton were at the time actively engaged.

Letter from Lord Palmerston to Captain Elliot, dated 30th March 1839; page 318 of the correspondence.

Captain Elliot's conduct, in connexion with these proceedings, received the approval of Her Majesty's Goverhment.

Letter from Captain Elliot to Lord Palmerston, dated 8th Dec. 1838; page 323 of the correspondence.

The lax manner in which the orders, issued for the suppression of the opium traffic, had been executed at Canton brought down upon the Governor the censure of the Emperor; and towards the end of the year 1838, the Provincial Government began to display greater energy. On the 3rd December, two Chinese coolies, who were landing some boxes of opium belonging to Mr. James Innes, were arrested immediately in front of the factory where he resided. The coolies confessed, under torture, that the opium was the property of Mr. Innes, and were understood to say

that it had been brought by an American ship, the "Thomas Perkins." The Hong merchants were summoned by the Governor on the 4th, and were, it was said, kept before him for several hours upon their knees, with the instruments of torture laid out before them; and the merchant, who had secured the American ship, was sent down to Whampoa, and there suffered the punishment of the Cangue for his supposed complicity in the smuggling enterprise. The Governor also issued orders, which were announced in writing by the Hong merchants to all the foreign traders, requiring the departure from China of Mr. Innes, and of the American ship, which was supposed to have brought the opium, within three days, and directing that all foreign trade should be stopped until his orders had been complied with. The merchants at the same time announced their intention of pulling down the house in which Mr. Innes lived, if he did not depart within the time specified. The foreign traders, irrespective of nationality, with what Captain Elliot described as "becoming spirit," expressed their determination to resist any such proceeding; and the Hong merchants soon changed their minds, and recalled their threats. The period, fixed for the departure of Mr. Innes and of the American ship, was also subsequently extended by the Governor to ten days. All trade was, however, suspended with effect from the 5th of December.

Enclosures 1 and 2 in letter from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839; pages 329 and 330 of the correspondence.

Mr. Innes met the threat of destruction of his house with a notice to Howqua, the senior merchant, that he, on behalf of the owners, would hold the merchants liable, jointly and severally, for any damage that might result to the goods, there deposited, in consequence of their proceedings, and submitted officially a copy of the notice to Captain Elliot, in case any of the persons, whose property was in peril, should be disposed to seek the intervention of the British Government. Personally, however, he appears to have been content to arrange matters in his own way without any assistance.

Enclosure 3 in the above letter page 330 of the correspondence. Enclosures 4, 5, and 6 in the above letter; page 331 of the correspondence Letter from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839; pages 326-329 of the correspondence.

Captain Elliot appealed to him on the 11th of December to place himself in communication with the Governor, and offer to abide by any decision which the officers of his nation might arrive at, after examination of the charges against him; but he declined to accede to the proposal, not doubting, as he said, that Captain Elliot would be glad to be freed from the trouble, provided that the coolies were saved from torture and the trade was not obstructed. He accordingly forwarded a declaration to the Governor, confessing that the opium was his and was landed from his boat, and absolving the coolies, on the ground that they were ignorant of the contents of the boxes; and left Canton for Macao, within the period specified, on the 16th of December 1839. The "Thomas Perkins" also was apparently constrained to leave the port.

Letter from Captain Elliot to Lord Palmerston, dated 13th Dec. 1839; page 324 of the correspondence.

In the meantime, on the 12th December, an attempt was made by the authorities to strangle a Chinese, who had been convicted of selling opium, in the square immediately in front of the foreign factories, with the evident intention of intimidating the foreigners, and inducing them to abandon the traffic. Preparations were made for the execution, but the foreigners determined to resist what was characterised by Captain Elliot as an "unprecedented and intolerable outrage." The apparatus was removed, and the Chinese officer in charge of the policemen present was requested to inform the higher authorities of the intention of the foreigners to prevent the execution. The officer offered no resistance to the removal of the apparatus; and the crowd of Chinese spectators which had collected was apparently not inimical to the foreigners. The crowd, however, was dense, and the injudicious attempts made by certain rash individuals to drive the people away, by pushes and blows, aroused their indignation, and led to a serious riot. The foreigners were assailed by showers of stones, and were driven into their factories, and the gate of one factory was forced open. The attitude of the crowd was for some hours very threatening, but it was eventually dispersed by Chinese soldiers; and no further disturbance occurred.

The Chinese, whose proposed execution had been the cause of the riot, was executed the same day at one of the usual places appointed for the purpose. Captain Elliot was at Whampoa, but as soon as the news of this affair reached him, he started at once for Canton. The riot was over, and the execution had taken place before he arrived; but, immediately upon his arrival, he sent word to the Governor, through the Hong merchants, that he was prepared to assist in the restoration of order; and if countenanced by him, would not allow any question of form to interfere with his endeavours to effect this result.

The British were supported in their resistance to the execution, as they had been in the determination to oppose the destruction of Mr. Innes' house, by some, if not all, of the other foreigners resident in Canton; but the fact was not stated clearly in the first reports, subsequently by Captain Elliot, of the proceedings from the seizure of

Mr. Innes' opium on the 3rd December up to the time of his own arrival in Canton on the 13th. Lord Palmerston, therefore, on the receipt of these reports, desired Captain Elliot to state specifically, in case the point had escaped notice in his subsequent despatches, whether the foreigners who had resisted the execution of the Chinese were British subjects only, or the subjects of other countries also; and inquired "upon "what alleged ground of right *they* considered themselves entitled to interfere with "the arrangements made by the Chinese officers of justice for carrying into effect, "in a Chinese town, the orders, of their superior authorities."

Letter from Lord Palmerston to Captain Elliot, dated 15th April 1839; page 325 of the correspondence.

The Governor of Canton does not appear to have vouchsafed any reply to the message sent to him by Captain Elliot on the 12th January; but the senior Hong merchants complained bitterly of the position in which they were placed, owing to the existence of the opium traffic within the river, not only at Whampoa, but also at Canton, and in the factories of which they were the proprietors; and declared that they would not carry on the legitimate trade, until this dangerous and objectionable traffic should have been effectually suppressed.

Letter from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839; pages 326-329 of the correspondence.

Captain Elliot resolved therefore to appeal to the whole foreign community, and convened a public meeting for the purpose on the the 17th December. At the meeting, which was attended by other foreigners as well as by British subjects, Captain Elliot pointed out the danger and disgrace of the river traffic; explained that he proposed to issue a public notice, requiring all British boats engaged in it to leave the river within three days, and that if the notice were not complied with, he should offer his assistance to the Local Government to put the traffic down; and appealed to British subjects and to foreigners alike to support him in his attempt to suppress so serious an evil.

Enclosure 7 in the above letter; pages 331 and 332 of the correspondence.

The appeal, does not seem to have produced much, if any, result; and on the 18th December Captain Elliot issued a notice of the nature indicated, requiring British craft employed in the traffic, to leave the river and desist from the business within three days, and warning British subjects engaged in it that any person feloniously causing the death of a Chinese would be liable to capital punishment, and that the British Government would not interpose, if vessels engaged in the traffic were seized and confiscated by the Chinese, and that forcible resistance to any such seizure would render the person concerned liable to the same penalties as resistance to duly constituted authority in England.

Enclosure 8 in the above letter; page 332 and 333 of the correspondence

Captain Elliot's pacific policy, and readiness to submit himself to the orders of the Chinese authorities, were unpopular with many of his countrymen at Canton; and the persons engaged in the traffic were not disposed to abandon their profits without a struggle. The notice therefore was unheeded; and on the 23rd December, the smuggling boats were still lying at Whampoa, and some of them were flying the English flag.

Enclosure 9 in the above letter; pages 333 and 334 of the correspondence.

Captain Elliot then addressed the Governor, informing him of the notice which had been issued, and of its failure to effect the removal of the boats engaged in the traffic, and requesting that he would issue such orders through the City Governor and the Commandant of Police, as would satisfy the persons concerned that the notice had received his authority. "The undersigned," he wrote, "is without doubt that the "continuance of this traffic in the inner waters will involve the whole foreign community "at Canton in some disastrous difficulty; and his gracious Sovereign would not interpose "for the protection of their property, on the behalf of those British subjects, who "continue to practise these dangerous disorders, after your Excellency's public warning "shall be authentically made known to them through the officers of their own nation.

"It is further to be desired, that your Excellency would command the honourable "officers, who may be employed on this occasion, to proceed to the station of the boats "with the undersigned, in order that the peaceful and well-disposed may not be involved "in the same consequences as the perverse.

"He can assure your Excellency, that he has not requested that the communications "should be forwarded through the honourable officers from any vain or idle pretensions "on his own part, but only that he may be able to impress on his own countrymen, in "cases of emergency, that he is acting at your Excellency's requisition, that his repre-"sentations may be more effectual, and that his own Government may see that he has "had proper authority, as well as urgent occasion, for his proceedings.

"Neither does the undersigned desire to trouble your Excellency upon trifling affairs. "So soon as the intercourse is renewed, all such matters can be conducted between "the official Hong merchants and himself, agreeably to your Excellency's further "arrangements."

Trade was suspended, and the emergency was great; and Captain Elliot superscribed the address as a petition, requesting the Governor to notify that this was the mode of address used by Chinese officers, even of the second (*sic*) rank, in order that it might be clear to the British Government that he had acted upon "admissible principles."

An appeal also was made to the Governor to pardon the two coolies who had been apprehended for landing the opium at Canton, on the ground that Mr. Innes' own statement showed that they were innocent.

The Governor, though he grandiloquently said that the smuggling boats did not trouble him one iota, was prepared to make some concession to secure Captain Elliot's co-operation in the suppression of the river traffic; and he accordingly, in an edict dated 25th December, directed the City Governor and the Commandant of Police to communicate his orders on the occasion, as a special case. "The request," he said in the edict, "is therefore granted, and the Prefect (City Governor) and Com-" mandant of Kwang Chow shall be directed, in the adoption of modified measures " suited to the occasion, to give you sealed commands, so that you may have " authority for proceeding in obedience thereto. But hereafter, in any affairs " wherein you are concerned, commands shall continue to be received through the " medium of the senior Hong merchants. The present measure must not be drawn " forward as a precedent."

Enclosure 10 the above letter: pages 334-336 of the correspondence.

On the "petition" question the Governor evaded the point raised by Captain Elliot. " With reference," he wrote, "to documents presented by foreign countries to officers " of the Celestial Empire, on any affairs, all others are required to use the term " 'Pin.' This is one of the fixed statutes regarding intercourse between the " central and foreign nations, and a rule, therefore, which it is, in an especial " degree, impossible to overleap. The Superintendent aforesaid, not being a blind " and unenlightened man, how can he plead ignorance of this? Besides, the " Sovereign of his nation has ever been reverentially compliant. And if you, a subject " and servant of that Sovereign, show that you indeed estimate the sentiments felt, and " carefully and diligently fulfil your duties conformably to them, you will receive a high " meed of praise. How can your well-doing be found fault with as being wrong?"

He gave, however, a distinct assurance that trade would be permitted as soon as the smuggling craft should have left the river; and informed Captain Elliot that it was unnecessary to intercede on behalf of the coolies, who had been sent for trial to the Commissioner of Justice.

The orders, issued on the subject of the river traffic, were communicated by the City Governor and the Commandant of Police in the following terms:—" The Prefect and " Commandant having received this document proceed to give commands, which when " the said Superintendent Elliot receives, he must forthwith conform to. He must " direct that the foreign boats of all nations, every one of them, leave the river within " three days; he must not allow them to linger thereafter for a single instant. Should " any offer resistance, he must, on the one hand, expel them with severity, and, on the " other hand, make representation, that measures may be taken in consequence. He " must also, for the future, give pressing attention to the duty of restraining the " foreigners of every nation, and of preventing boats and ships from bringing opium, " or other prohibited commodities, into the river."

Captain Elliot acknowledged this communication on the 28th December. He again explained, that he had used the character "Pin" on his addresses, because by the rules of the Chinese Empire subordinate officers used that character in their addresses to their superiors, and it was therefore reasonable that he should conform to the usage; and requested that in future, in all matters of importance, communications might be made to him through the City Governor and the Commandant of Police, as otherwise he would not be in a position to act upon them.

Enclosure 11 in the above letter; page 336 of the correspondence.

To this request the Governor acceded. "With reference," he wrote in an edict to the Hong merchants, dated 29th December 1838, "to the matter of his present address, as above stated, when hereafter there shall be any really important matter, wherein it " may be requisite for the said Superintendent to act in concert, it will of course " be fitting to make an arrangement requiring the Prefect and Commandant aforesaid " to give him directions. For such matters, as are of an ordinary nature, the old " regulations still subsist, and in conformity with them, commands must still be " received through the medium of the senior Hong merchants. The Superintendent " aforesaid must not, indeed, in opposition to these regulations, make any idle " requests."

Enclosure 12 in the above letter; pages 336 and 337 of the correspondence.

These orders were enjoined upon Captain Elliot by Howqua, the senior merchant, on the 30th December; but he placed, (by command as he said), the edict with the Governor's seal in Captain Elliot's hands, to satisfy him as to its authenticity.

Letter from Captain Elliot to Lord Palmerston, dated 2nd [illegible]

Captain Elliot accepted the concession made as sufficient, hoisted again the British flag at Canton, and took action at once against the smuggling craft, with the result that, on the 31st December, he was able to report to the Governor, through the senior merchant, the departure of all the boats from Whampoa.

Enclosure 14 in the above letter; pages 337 and 338 of the correspondence.

On the same day also he issued an official notice to British subjects at Canton; informing them that the Governor had consented to communicate with him direct on all important business under the seals of the City Governor and the Commandant of Police; explaining once more the reason for his proceedings, and reminding them that the India and China Trade Act provided them with a legal remedy for any illegalities he might inadvertently commit, and that it was his duty to transmit to the Secretary of State any complaint, or appeal, they might wish to make against his proceedings. "After," he said, "the most deliberate reconsideration of this course "of traffic, (which he heartily hopes has ceased for ever,) the Chief Superintendent "will once more declare his own opinion, that in its general effects it was intensely "mischievous to every branch of the trade, that it was rapidly staining the British "character with deep disgrace, and finally that it exposed the vast public and private "interests involved in the peaceful maintenance of our regular commercial intercourse "with this Empire, to imminent jeopardy.

"Thus profoundly impressed, (and after the failure of his own public entreaties "and injunctions,) the Chief Superintendent feels that he would have betrayed his "duty to his gracious Sovereign and his country, if he had hesitated, beyond the period "he had formerly fixed, effectually to separate Her Majesty's Government from any "direct or implied countenance of this dangerous irregularity. Looking steadily at "its effects on British interests and British character, he had further resolved to "shrink from no responsibility in drawing it to a conclusion; and he will as firmly "use all lawful means in his power to prevent its recurrence. It is a source of great "support to him, that the general body of the whole community, settled at Canton, "strongly concur with him in the deprecation of this peculiar mischief, and he has not "failed to afford Her Majesty's Government the satisfaction of knowing that such is "the case."

Letters from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839; pages 326-329 of the correspondence.

It is significant of the feeling, with which Captain Elliot's policy was regarded by some of his countrymen at Canton, that he deemed it inexpedient to publish with the above notice those portions of his correspondence with the Governor, which referred to the manner in which his intercourse with the authorities should in future be conducted; and the request, which he made to the Governor, to direct the officers employed in the duty of removing the smuggling craft from the river, to proceed with him to their place of anchorage, brought down upon him, as he said, a torrent of censure in the Canton newspapers. Captain Elliot's presence on the occasion was no doubt required to prevent any possibility of a conflict between the smugglers and the preventive officers, but it was natural enough that men, who had identified themselves with Lord Napier's views and methods, should have seen much to criticise in Captain Elliot's proceedings.

Enclosure 13 in the above letter; page 337 of the correspondence.

On the 1st January 1839, the senior Hong merchant announced to Captain Elliot the orders of the Governor to re-open the trade, and business was resumed.

Letters from Captain Elliot to Lord Palmerston, dated 31st December 1838 and 2nd Jan. 1839; pages 325-329 of the correspondence.

In his letters to Lord Palmerston, describing the measures he had taken to suppress the river traffic and to induce the Governor of Canton to re-open the trade, Captain Elliot claimed that, in gaining the Governor's consent to communication with him on all important subjects under the seals of the City Governor and the Commandant of Police, he had obtained a substantial concession, and justified the submission of his addresses as "Pin," or petitions, upon the ground of expediency. "I made "up my mind," he wrote, "to incur the responsibility of making my communica- "tions under the character 'Pin,' because I was sensible that it was vain to hope "this Government would consent to give way upon such a point, so long as there "was an absence of really pressing necessity; and, in that situation of affairs, I am as "sure the change would pass without difficulty, and probably without comment. "Indeed, I felt I could shape my own proceedings on the present occasion in such a "manner as would necessarily involve the principle that British officers should inter- "communicate upon a footing of equality with Native officers of the same ranks; and "more than that, I am afraid it will be impossible to get from this Government without "driving it to extremities upon matters of form."

He argued also once more that the idea conveyed by the word "Pin" was rather that of a "respectful report" than a petition.

He was not, as he showed, insensible to the fact that, in the communication which he received from the City Governor and the Commandant of Police, these

officers issued orders to him on their own account, and did not merely announce formally the Governor's orders; but he considered it expedient to make no objection on this score, and to wait for some more favourable opportunity to address these officers and set the matter right. "With," as he wrote, "the essential point in my hand, I "felt that it would be unwise to risk its complete accomplishment by difficulties upon "what, I am well aware, are the mere tricks of wordy assumption, so characteristic of "Chinese negotiation, and which I can set to rights without hazard on some future "and more favourable occasion."

The Governor's orders, it may be added, left the exact nature of the concession, which he was prepared to make, somewhat obscure; but, from the words used, it would seem that he contemplated an issue of orders by the City Governor and the Commandant rather than a formal communication by them of his orders. Captain Elliot, however, may possibly have been right in his interpretation of the Governor's intentions.

The explanation, which he gave of the reasons, which had induced him to co-operate in the suppression of smuggling by British subjects within the river shows clearly how strongly Captain Elliot felt in regard to this particular form of the illicit traffic. "It had "been clear to me," he wrote, "from the origin of this peculiar branch of the opium traffic, "that it must grow to be more and more mischievous to every branch of the trade, "and certainly to none more so than to that of opium itself. As the danger and "the shame of its pursuit increased, it was obvious that it would fall by rapid degrees "into the hands of more and more desperate men; that it would stain the foreign "character with constantly aggravating disgrace in the sight of the whole of the "better portion of this people; and lastly, that it would connect itself more and more "intimately with our lawful commercial intercourse, to the great peril of vast public "and private interests. Till the other day, my Lord, I believe there was no part of "the world where the foreigner felt his life and property more secure than here in "Canton,* but the grave events of the 12th ultimo have left behind a different "impression. For a space of near two hours the foreign factories were within the "power of an immense and excited mob, the gate of one of them was absolutely "battered in, and a pistol was fired out, probably without ball or over the heads of "the people, for at least it is certain that nobody fell. If the case had been otherwise, "Her Majesty's Government and the British public would have had to learn that the "trade and peaceful intercourse with this Empire was indefinitely interrupted by a "terrible scene of bloodshed and ruin. And all these desparate hazards have been "incurred for the scrambling and, comparatively considered, insignificant gains of a "few reckless individuals, unquestionably founding their conduct upon the belief that "they were exempt from the operation of all law, British or Chinese.

"I owe it to myself to say that foreseeing the serious consequences that must arise "from the further growth of this evil, I wrote more than a year and a half since to "the General Chamber of Commerce, moving them to use their best efforts to put it "down. It is also an act of similar justice to that body, (and to the great majority of "the foreign community settled here,) to state that this peculiar form of the traffic has "been practised or countenanced by very few amongst them. But it was extending "itself widely amongst persons not forming part of the resident society, and in no "long lapse it must have brought to Canton the refuse of all the countries in our "neighbourhood."

The spirit of opposition to his proceedings, which had been evinced by a section of his countrymen in Canton, constrained him to append to his reports of these occurrences an appeal to Lord Palmerston to communicate for publication an assurance of his support, and to confer upon him, without delay, more extended and better defined powers for the control of his countrymen in China. "There is certainly," he wrote, "a spirit in active force amongst British subjects in "this country, which makes it necessary, for the safety of momentous concernments, "that the officer on the spot should be known to stand without blame in the estimation "of Her Majesty's Government; and it is not less needful that he should be forthwith "vested with defined and adequate powers for the reasonable control of men, whose "rash conduct cannot be left to the operation of Chinese laws without the utmost "inconvenience and risk, and whose impunity is alike injurious to British character "and dangerous to British interests."

Letter from Captain Elliot to Lord Palmerston, dated 2nd Jan. 1839; pages 339 and 340 of the correspondence.

* This may have been true in regard to the suburb of Canton in which the foreign traders were permitted to reside, and in which as tenants and lessees of the Hong merchants' houses, they were in a measure under their direct protection. The city, however, was closed to foreigners; and numerous cases occurred, during the time of the East India Company, in which foreigners were assaulted by natives in the neighbourhood of Canton without any provocation.

The tacit assent of the Chinese Government to any arrangements, that might be made, for the control of British subjects, was he said, certain; but any previous negotiation on the subject with the Governor would merely create suspicion as to the intentions of the British Government; and as an illustration of the difficulty and danger of the position, he added that, until he was differently instructed, he should hold it to be his "duty to resist to the last the seizure and punishment of a British "subject by the Chinese law, be his crime what it might." "In fact, my Lord," he concluded, "if Her Majesty's officer is to be of any use for the purposes of just "protection; if the well-founded hope of improving things honourable and established "is not to be sacrificed to the chances, which may cast up, by goading this Govern- "ment into some sudden and violent assertion of its own authority, there is certainly "no time to be lost in providing for the defined and reasonable control of Her "Majesty's subjects in China."

Letter from Lord Palmerston to Captain Elliot, dated 13th June 1839; page 344 of the correspondence.

Lord Palmerston's reply to these letters was written on the 13th June 1839. "With reference," he wrote, "to such of these despatches as detail the circumstances, "which led to an interruption of the trade for a short period in December last, and "the steps which you took in consequence, with a view to the re-opening of the trade "and to the re-establishment of your official communications with the Chinese autho- "rities, I have to signify to you the entire approbation of Her Majesty's Government of "your conduct on those matters. But I have at the same time to instruct you not to "omit to avail yourself of any proper opportunity to press for the substitution of a less "objectionable character than the character 'Pin' on the superscription of the "communications which you may have occasion to address to the Viceroy."

Letter from Captain Elliot to Lord Palmerston, dated 21st Jan. 1839; page 342 of the correspondence.

The trade was not interfered with throughout January 1839, but a crisis was fast approaching. The Provincial Government continued its efforts for the suppression of the opium traffic, and proceedings were instituted against consumers as well as importers and vendors of opium. The severity of these measures produced, as Captain Elliot reported, a corresponding degree of desperate adventure upon the part of the smugglers, and the illicit traffic, though checked, was not suppressed.

Proclamation issued by the Governor and Deputy Governor to the foreign merchants of all nations, in Jan. 1839; pages 345-347 of the correspondence.

The unfortunate coolies, who were arrested for real, or supposed, complicity in Mr. Innes' attempt to smuggle opium into Canton, appear to have been executed, and the Emperor and his advisers were unquestionably, by this time, in desperate earnest. Towards the end of January, a proclamation was issued direct to the foreign merchants of all nations by the Governor and Deputy Governor of Canton; informing them that the Emperor had firmly resolved to suppress the importation and use of opium and had recently appointed an officer of high rank to take all measures that might be necessary for the purpose; ordering them to at once "wash out their past defilements," send away the receiving-ships, and abstain from all further dealings in the drug; and threatening that, if they did not comply, a proposal would be made to the Emperor for the permanent and complete prohibition of the foreign commerce. "The Great Emperor," they said, "has just now appointed a high officer as his Special "Commissioner, to repair to Canton in order to examine and adopt measures in "reference to the affairs of the seaports. From morn to eve his arrival may hourly "be looked for. His purpose is to cut off utterly the source of this noxious abuse, "to strip bare and root up this enormous evil; and though this axe should break in "his hand, or the boat should sink from beneath him, yet will he not stay his efforts "till the work of purification be accomplished."

Letters from Captain Elliot to Lord Palmerston, dated 30th Jan. and 8th Feb. 1839; pages 342-344 of the correspondence.

For reasons that can only be surmised, this proclamation was not officially communicated by the Governor to Captain Elliot, and the issue of orders direct to the foreigners by the Governor and the Deputy Governor, an unusual though not an unprecedented proceeding, was evidently intended to impress them with a conviction of the earnestness of the Government.

On the 30th January also Howqua, the senior Hong merchant, warned Captain Elliot that strong measures might be expected on the arrival of the Special Commissioner, and expatiated on the evils of the opium trade, particularly of the river traffic, which had been recently suppressed.

"There seems," wrote Captain Elliot to Lord Palmerston on that date, "no longer "any room to doubt that the Court has firmly determined to suppress, or, more "probably, most extensively check the opium trade. The immense, and, it must be said, "most unfortunate increase of the supply during the last four years, the rapid growth "of the East Coast trade, and the continued drain of the silver, have no doubt greatly "alarmed the Government; but the manner of the rash course of traffic within the river "has probably contributed most of all to impress the urgent necessity of arresting the

" growing audacity of the foreign smugglers, and preventing their associating themselves " with the desperate and lawless of their own large cities.

" In the excited temper of this extraordinary Government it would be unsafe indeed " to speculate upon the particular measures they may pursue, but, at least, I am sure that " my own altered position and the course I took, last month, with respect to the forced " trade within the river, will give much weight to my remonstrances in any moment of " emergency."

Captain Elliot's conviction of the sincerity of the Chinese Government in its measures to suppress the trade was not, it may be added, shared by the opium traders, and the quantity of imported opium from India was apparently not diminished.

Letter from Captain Elliot to Lord Palmerston, commenced on the 6th April, and finished on the 4th May, 1839; pages 385–391 of the correspondence.

The proclamation to the foreigners was followed by the public execution at Canton of a Chinese for opium smuggling, in the square in front of the factories where they resided. The foreigners were overawed by the presence of a considerable body of troops, and the execution, though keenly resented, was not resisted.

Letter from Captain Elliot to Lord Palmerston, commenced on the 30th March, and finished on the 3rd April, 1839, pages 355–359 of the correspondence.

The Superintendent was at Macao, where he had gone to confer with the Captain of H.M.S. "Larne," but Mr. Johnston, the Deputy Superintendent, struck the English flag as a protest, and the flags of other European nations also were lowered. Captain Elliot started for Canton as soon as he received the intelligence, and arrived there on the 2nd March. On the 4th he issued a public notice to British subjects informing them that, in his opinion, the object of the execution was, "not only to " intimidate, but to degrade, and render hateful, the whole foreign community in the " sight of the native population," and that he intended to represent the matter in this light to the Secretary of State; and submitted an address to the Governor requesting, on behalf of the British Government, that he would be pleased to direct the discontinuance of executions of native criminals in the vicinity of the foreigners' houses in the future. "The undersigned is afraid," he wrote, "that it would be impossible to " stay the hands of every excited individual, in such a crisis of intense agitation, as " another execution before these factories would produce; and one fatal blow might " lead to death, destruction of property, and disturbance of the lower orders of the " native population, which the most anxious efforts of the honourable officers could not " prevent."

Enclosure 5 in the above letter; page 360 of the correspondence.

Enclosure 6 in the above letter; page 361 of the correspondence.

On the 9th March the Governor sent a message to the effect that he did not propose to reply to this address; and, as the trade was not interrupted, Captain Elliot, after again assuring British subjects of his intention to report the occurrence, with a strong expression of opinion, that the lives and properties of the whole foreign community would be imperilled by a repetition of such proceedings, returned to Macao, to which place, it was supposed, the measures of the Imperial Commissioner would be first directed. From Macao, on the 12th March, Captain Elliot again appealed to the Governor to forward to him, for the sake of the peace and goodwill, which had subsisted so long, a "calming declaration, in order that he might report to the high " officers of his own nation the needlessness of immediate and direct appeals to " the great Emperor for protection;" but no notice was taken of the communication.

Enclosure 7 in the above letter; page 361 of the correspondence.

Enclosure 8 in the above letter; page 362 of the correspondence.

A protest by the Canton Chamber of Commerce against the execution was met by a contemptuous denial of the right of foreigners to criticise the proceedings of the Government.

Evidence of Mr. Jardine before the Select Committee of the House of Commons, on the China Trade, in 1840, Q. 1619.

Lin, the High Imperial Commissioner, charged, as he said himself, with the settlement "of the affairs of the outer frontier," arrived at Canton in the month of March, and, in a few days after his arrival, commenced his measures for the complete annihilation of the opium trade.

To the Hong merchants he issued an edict on the 18th of the month, pointing out that, since 1816, they had been made responsible, by the orders of the Emperor, for preventing the importation of opium in foreign ships; that bonds had been regularly given by them to the effect that ships arriving in the port had brought no opium, though they must have been well aware of its transhipment outside at Lintin, and of its clandestine importation even within the river; taunting them with their increasing civility and subservience to the foreign merchants, and directing them to communicate to the foreigners the orders, which he was then issuing, and to arrange for their execution within three days; threatening that, in the event of their failure to arrange matters satisfactorily, he would "solicit forthwith the Royal death-warrant, and select " for execution one or two of the most unworthy of their number."

Enclosure 2 in a letter from Captain Elliot to Lord Palmerston, dated 22nd March 1839; pages 372–375 of the correspondence.

The following passage in the edict shows clearly how closely the measures, taken at this time, to prohibit the introduction and use of opium, were connected with the drain

of native and foreign silver, to which the trade in the drug gave rise. "Thus it "is in regard to the exportation of the pure silver beyond the sea, a thing so very "strictly prohibited. Did the foreigners really barter goods for goods, what silver "would there be for them to carry away? But, more than this, the Hong merchants "once represented, that each year, in addition to the interchange of commodities "by barter, the foreigners require always to bring into the inner land foreign money "to the amount of four or five millions of dollars. Were this really the case, how "comes it that of late years the foreign ships have brought into the port no new "foreign money, and that the foreign silver, existing in the country, has daily been "diminishing in quantity? And how happens it, that among the Hong merchants "there have been bankrupts, whose debts to foreigners have exceeded a million of "money? It is clear that these four words 'goods bartered for money' are totally "and altogether false.

"There is one thing yet more extraordinary. These Hong merchants, sheltering "themselves under the memorial of a former Superintendent of Customs, Aa, which "requested temporarily, as a trial, that three-tenths of any surplus foreign money "should be allowed to be taken away, have acted as though this request had passed "into an established law, and have yearly, under cover of this, solicited permission to "embark money."

Lin's arrogance and hatred of foreigners also are clear from his taunt to the Hong merchants as to their subservience. "I have heard," he said, "that formerly, when "the foreigners came to the factories, they would go in full dress, with swords by "their sides, to wait upon the several Hong merchants, and would often meet with a "denial, nor would they be seen, or have their visits returned, until after a second "visit. But of late years there have been those who will sue to the foreigners for "patronage, and will even pass beyond the Custom Houses, or go to Macao to meet "them. . . . . What sense of shame, indeed, does there yet remain? Though "it be true that this has arisen from the conduct of probationary Hong merchants, "who have shown the example of such artful demeanour, and that the original "merchants, men of property and family, would never have descended to this stage of "degradation, yet all now are equally involved in the stench of it, and truly I burn "with shame for you."

Edict addressed to the foreigners of all nations; enclosure 1 in the same letter; pages 350–352 of the correspondence.

On the same day he issued his commands direct to the foreigners of all nations. "Let," he said, "our ports once be closed against you, and for what "profits can your several nations any longer look? Yet more, our tea and our "rhubarb, seeing that should you foreigners be deprived of them, you therein lose "the means of preserving life, are without stint or grudge granted to you for "exportation, year by year, beyond the seas. Favours never have been greater. Are "you grateful for these favours? You must then fear the laws, and in seeking profit "for yourselves must not do hurt to others. Why do you bring to our land the opium, "which in your lands is not made use of, by it defrauding men of their property, and "causing injury to their lives? I find that with this thing you have seduced and "deluded the people of China for tens of years past; and countless are the unjust "hoards that you have thus acquired. Such conduct rouses indignation in every "human heart, and it is utterly inexcusable in the eye of Celestial reason.

"The prohibitions formerly enacted by the Celestial Court against opium were "comparatively lax; and it was yet possible to smuggle the drug into the various ports. "Of this the Great Emperor, having now heard, his wrath has been fearfully aroused, "nor will it rest till the evil be utterly extirpated. Whoever among the people of "this inner land deals in opium, or establishes houses for the smoking of it, shall be "instantly visited with the extreme penalties of the laws; and it is in contemplation "also to render capital also the crime of smoking the drug."

He directed them therefore to at once deliver up for destruction all the opium stored in ships at Lintin and other places; and to execute for the future a bond, containing a declaration in Chinese and in their own language, to the effect that no opium should again be brought to China, and that, in the event of any being imported, the goods of the parties concerned should be confiscated, and they should suffer themselves the extreme penalties of the law, and that such punishment should be willingly submitted to.

He had heard, he said, that foreigners attached great importance to the word good faith; and he promised that, if they would faithfully deliver up all the opium and prevent its future introduction, he would implore the Emperor not merely to condone the past, but also to confer upon them his "Imperial rewards" as an encouragement.

If, however, they should continue obstinate, it would be necessary to include them also "in the severe course of punishment prescribed by the new law."

"I swear," he added, "that I will progress with this matter from its beginning to "its ending, and that not a thought of stopping half way shall for a moment be "indulged."

"Good foreigners," who had not sold opium, were also invited to come forward, under the offer of rewards, and point out their offending countrymen, and compel them to deliver up their opium; and a term of three days was allowed for the submission of a reply to the edict, and for the execution of the necessary bonds.

Preparations also were made at Macao with the apparent intention of coercing the foreigners in the event of their refusing compliance. A considerable military force was assembled; a number of war junks and other vessels was collected, and a display of old junks for use as fire ships was made at the Bocca Tigris. Alarmed by these preparations, Captain Elliot wrote to the Governor of Canton, and to the Chinese Magistrate of Macao on the 22nd March, inquiring whether it was the purpose of the Governor to make war upon the subjects and ships of Great Britain in China, and asking for an immediate assurance as to the nature of his intentions. "He has," he added, "to declare his readiness to meet the officers of the Provincial Government, and "to use his sincere efforts to fulfil the pleasure of the great Emperor, as soon as it is "made known to him."

Letter from Captain Elliot to Lord Palmerston, commenced on the 30th March, and finished on the 3rd April, 1839; pages 355-359 of the correspondence.

Enclosure 9 in the above letter; page 362 of the correspondence.

The Imperial Commissioner's orders of the 18th March reached Macao on the same day (22nd March), shortly after the despatch of these communications, with accounts of the measures which he had taken subsequently at Canton; and Captain Elliot at once issued a notice to British subjects informing them that he had no confidence in the disposition of the Government, and requiring all British ships, then at the outer anchorages, to proceed forthwith to Hong Kong, and to there place themselves under the orders of Captain Blake of the "Larne," and prepare to resist any act of aggression on the part of the Chinese. He obtained also a pledge from the Portuguese Governor of Macao, that he would protect, as far as possible, all British subjects, residing in, or resorting to, that settlement from attack, as long as they were not engaged in any traffic at variance with the laws of the Chinese Government. On the 23rd March, he issued at Macao a further notice to British subjects, advising them to leave Canton, as soon as he might be able to obtain passports authorising them to do so, and to remove their property from the ships at Whampoa to the Portuguese settlement, informing them of the assurance of protection given by the Governor, and warning them that if they remained at Canton, contrary to his advice, they would do so upon their own responsibility; and then started for Whampoa for the relief of the British subjects who were in Lin's power, in the provincial city.

Letter from Captain Elliot to Lord Palmerston, dated 22nd March 1839; page 349 of the correspondence; and Enclosure 10 in the letter from Captain Elliot to Lord Palmerston, commenced on the 30th March, and finished on the 3rd April, 1839; pages 363 and 364 of the correspondence.

The foreign merchants at Canton did not reply, within the prescribed period, to the edict of the Imperial Commissioner, and coercive measures were commenced even before the three days had passed. On the 19th March trade was stopped, and communication with Whampoa and the outside anchorages was prohibited by order; and, after the 21st, all boats were prevented from from leaving Canton. The Commissioner's intentions formed the subject of much discussion; and on the evening of the 21st an abortive attempt was made, at the earnest solicitation of the Hong merchants, to satisfy him by an offer to surrender 1,030 chests of opium, on the understanding that the remainder should be sent back to India, and that the foreigners should abstain from trading in the drug in future. The proposal, however, was at once rejected; and on the 22nd the Hong merchants were sent to the house of Mr. Dent,* who was, as Captain Elliot said, one of the most respected of the British merchants at Canton, to request him to go into the city on the following morning. Mr. Dent raised objections, and demanded a guarantee for his personal safety; and the failure of the merchants to induce him to comply brought down upon them the wrath of the Commissioner. Howqua's son and two of the other principal merchants were put into prison, and, on the 23rd, Howqua and a mandarin brother of one of the imprisoned merchants were sent by the Commissioner, with iron chains round their necks, to Mr. Dent's house, to require him to at once appear before the Commissioner. Most of the foreign residents were assembled at the house; and, after some consideration, it was

Letter from Captain Elliot to Lord Palmerston, commenced on the 6th April, and finished on the 4th May, 1839; pages 385-397 of the correspondence.

Evidence of Messrs. Inglis, A. Daniell, and A. Matheson before the Select Committee of the House of Commons on the China Trade in 1840; and Notes of Proceedings at Canton on 23rd March by Mr. Elmslie, Secretary to the Superintendents; pages 365-367 of the correspondence relating to China; presented to Parliament in 1840.

* Mr. Dent appears to have been popular with the Chinese at Canton, and was Chairman of the Committee, which settled the debts of the Hingtae Hong. The firm of Dent & Co. had taken no part in the river smuggling, but Mr Dent, it may be noticed, was the third person named by the Sub-Censor Heu Kew. Mr. Jardine, the first, left China at the end of January 1839; and Mr. Innes, the second, was at Macao.

unanimously resolved that Mr. Dent should not comply with the order without a written and sealed guarantee to the effect, that he would be treated with respect, and would be permitted to return to the factories after the interview. The unfortunate Howqua, and the mandarin who accompanied him, expressed their inability to apply for any such guarantee, and a deputation of foreigners was sent to the City Governor, who was at the Consoo House, to explain the reasons why Mr. Dent could not comply with the orders. Three subordinate mandarins were then sent, who reiterated the orders for his attendance, and called heaven to witness that they would conduct him to the Commissioner's presence and back again in safety. The opinion of all the foreigners present was again taken, and was again unanimous, to the effect that he should not enter the city without a sealed guarantee from the Commissioner himself. Finding argument useless, the mandarins declared that they could not leave without Mr. Dent, and must use force to compel him to accompany them. Threats, however, were not more efficacious than arguments; and, after waiting some time, the mandarins proposed that a deputation should accompany them to the presence of the City Governor. This was agreed to, and several gentlemen went with them to the Consoo House, and explained to the City Governor, and other mandarins, that Mr. Dent could not be permitted to enter the city without a guarantee. This, the City Governor and others said, could not even be asked for; and they then suggested that Mr. Morrison, the Chinese Secretary to the Superintendent, should accompany them to the city. Mr. Morrison, however, had already been detained for some time against his will at the Consoo House, and, as there was reason to believe that he would be kept as a hostage, the suggestion was negatived.

Mr. Inglis, one of Mr. Dent's partners, was then approached, and he and three other gentlemen agreed to enter the city with the City Governor. Mr. Inglis, and the other gentlemen, one of whom, Mr. Thom, was acquainted with the Chinese language, were taken to a temple in the city, and, after, some delay, were ushered into the presence of the Chinese Commissioners of Finance, Justice, Salt, and Grain, the four officers of the Local Government who were next in rank to the Deputy Governor. The City Governor* also was present.

The Commissioners inquired why Mr. Dent had not attended, and Mr. Inglis and Mr. Thom replied frankly that he was afraid to enter the city for fear that he would be detained to force him to surrender his opium, of which he had a large quantity. The Judicial Commissioner said that Lin, the Imperial Commissioner, knew Mr. Dent was a large capitalist, and he accordingly wished to admonish him, and inquire into his business, and that if he did not willingly attend, he would be dragged out of his house by force, and would assuredly be killed. Eventually, after a detention of some hours, the deputation was permitted to leave, and returned safely to the factories under an escort, arriving there between nine and ten o'clock at night.

The Hong merchants were waiting at the factories, when Mr. Inglis and the others arrived, and insisted that Mr. Dent must comply with the order, and go into the city on the following day. The 24th, however, was Sunday; and a plea to this effect was successful in procuring a respite; and 10 a.m. on the Monday was fixed as the hour for his attendance.

Letter from Captain Elliot to Lord Palmerston, commenced on the 30th March, and finished on the 3rd April, 1839; pages 355–359 of the correspondence.

Captain Elliot reached Whampoa, at 4 p.m., on the 24th, and learnt there that all intercourse with Canton had been cut off for two days. He, therefore, put on his uniform; sought out the principal mandarin on duty; informed him that his boat was unarmed, and that he was resolved to proceed to Canton, even at the sacrifice of his life, and requested that he would instruct the officers under his orders not to fire upon him. The mandarin tried to dissuade him from the attempt, but abstained apparently from any active opposition, and Captain Elliot proceeded in the Superintendent's cutter to the usual anchorage, about four miles from the factories. He then got into the gig of the "Larne," and, partly by the aid of argument, and partly by the speed of his boat, passed successfully through the blockading junks, and landed at the factories about 6 p.m. on the same evening.

His first act was to hoist the British flag, which had been struck since the execution on the 26th February. He then took Mr. Dent under his own personal protection, informing the Hong merchants that he was prepared to allow him to enter the city, provided that he was permitted to accompany him, and that the Commissioner would give a sealed guarantee that they should not be separated for a moment.

* The status of this officer, through whom, or by whom, orders were to be issued on important occasions to the British Superintendent, may be estimated from the fact that he did not on this occasion sit in line with the four Commissioners, but occupied a bench in a different part of the room.

No notice was taken of this communication, and after Captain Elliot's arrival, Lin appears to have turned his attention to him, and to have abandoned the idea of proceeding against Mr. Dent. A persecution of the entire foreign community also was commenced. On the evening of the 24th supplies of food and drinking water were cut off; the native servants were taken away, and a rigorous blockade was enforced. An arc of boats was formed in the river in front of the factories; the square and the ground in rear of the factories were occupied by a military force, and the whole body of Hong merchants, and a strong guard with swords drawn, were stationed in front of the hall occupied by the British Superintendent. Many of the old residents, however, had laid in a stock of provisions, in anticipation of a stoppage of supplies; and it was customary to keep jars of drinking water in the factories, so that no actual privation from want of food or water appears to have been experienced. The number of persons confined was about 230.

Evidence of Messrs. Inglis and Daniell before the Select Committee of the House of Commons upon China trade in 1840.

On the 25th March, Captain Elliot applied to the Governor for the grant of passports within three days, permitting all British subjects to leave Canton, and to remove their property with them, within 10 days of the date of issue of the passports. "Elliot," he wrote, "cannot conceal from your Excellency his deep and sorrowful conviction, that the peace between the two countries is placed in imminent jeopardy by the late unexplained and alarming proceedings of this Government."

Enclosure 13 in the letter from Captain Elliot to Lord Palmerston commenced on the 30th March, and finished on the 3rd April 1839; page 367 of the correspondence.

The Governor, whose authority appears to have been entirely superseded, forwarded this address to the Commissioner, and thought it expedient to make a more than ordinarily extravagant display of arrogance. "In regard," he wrote, to the style "of the address, there is much that cannot be understood. Thus, for instance, the "words 'the two countries,' I know not the meaning of. While our Celestial Court "has in humble submission to it ten thousand regions, and the heaven-like goodness "of the great Emperor overshadows all, the nation aforesaid, and the Americans, "have by their trade at Canton during many years, enjoyed, of all those in subjection, "the largest measure of favours. And I presume it must be England and America "that are conjointly named 'the two countries.' But the meaning of the language "is greatly wanting in perspicuity."

Enclosure 15 in the above letter; pages 368 and 369 of the correspondence.

The Commissioner, on receipt of the address, briefly directed the City Governor and Commandant of Police to issue orders requiring implicit obedience to the mandate already given; and these officers then ordered Captain Elliot to take the opium from the receiving ships, and deliver it up to the Government, and said that, when this was done, passports might be applied for.

These orders were issued and received on the 25th March; and, on the same date, Captain Elliot again addressed the Governor; declared himself to be sincerely anxious to meet, as far as possible, the wishes of the Emperor, and requested that an officer might be at once deputed to discuss and peaceably settle the question. He asked also that the supply of provisions might be permitted, and that the native servants might be allowed to return, so as to restore confidence and tranquillity, and that he might be permitted to communicate with the British subjects and ships at Whampoa. "Elliot," he wrote, "has, in all respects, since he filled the station of Superintendent, manifested his "earnest desire to keep the peace, and fulfil the pleasure of your Excellency; and, as "an officer of his country, he now asks for reasonable treatment for himself and all the "men of his nation, and claims your Excellency's confidence in his peaceful dispositions "on this occasion of perilous jeopardy."

Enclosure 14 in the above letter; pages 367 and 368 of the correspondence.

The Commissioner appears to have expected that the Superintendent would visit the Consoo house and confer personally with the Chinese officers there; and on the evening of the 25th or morning of the 26th March, he issued further orders, admitting that Captain Elliot's request for the deputation of an officer "to enable him clearly and "minutely to state matters," was not unreasonable, but complaining of his having remained in concealment throughout the day, though officers had been specially deputed to confer with him, and accusing him of having attempted to abscond with Mr. Dent, and of having persuaded the foreigners not to surrender their opium.

Enclosures 16 and 17 in the above letter; page 370–372 of the correspondence.

"Had not," he said, "the precautionary measures been most strict and complete, "almost had the hare escaped, the wolf run off. Elliot's conduct being thus exactly "the same as that of an artful schemer, can he yet be regarded fit for the office of "Superintendent." . . . . "At this time, the offence of contumacious resistance and "opposition is turned away from Dent and fixed on Elliot."

"It is needful," he continued, "that he (Elliot) should come to have a fear of crime, "and a purpose to repent and amend; that he should give clear commands to all the "foreigners to obey the orders, requiring them to take the opium on board the store-

" ships, and speedily to deliver it up. Then not only the compradores of individuals " and of ships will be all restored as usual; but I, the Commissioner, with your " Excellency, the Governor, and the Lieutenant-Governor, will assuredly cease to go " back into the past, and will lay our entreaties before the great Emperor, that favours " may be shown beyond the bounds of law."

These orders were communicated to Captain Elliot by the City Governor and two other magistrates, with further commands from them directing him to pay immediate obedience. Harassed by anxiety and responsibility, and impressed also, apparently, with the conviction that the Chinese Government had put itself entirely in the wrong by Lin's proceedings, Captain Elliot decided to comply with the requisition, and surrender the opium; and on the 27th March he announced this decision direct to the Commissioner. "Elliot," he wrote, "has now had the honour to receive, for the " first time, your Excellency's commands, bearing date the 26th day of March, issued " by the pleasure of the great Emperor, to deliver over into the hands of honourable " officers, to be appointed by your Excellency, all the opium in the hands of British " subjects. Elliot must completely fulfil these commands; and he has now respectfully " to request that your Excellency will be pleased to indicate the point, to which the " ships of his nation, having opium on board, are to proceed, so that the whole may be " delivered up."

Enclosure 18 in the above letter; page 373 of the correspondence.

This reply was said by the Commissioner to manifest a "respectful sense of " duty and understanding;" and the City Governor, at his direction, issued orders requiring Captain Elliot to ascertain and report the exact amount of opium in store with a view to its delivery.

Enclosure 19 in the above letter; pages 373 and 374 of the correspondence.

Captain Elliot then issued what he himself described as a "most momentous circular" to British subjects, requiring them to deliver up to him, for the service of Her Majesty's Government, all the opium which was in their possession, or under their control at that time, upon the coast of China.

Enclosure 20 in the above letter; page 374 of the correspondence.

"Now I, the said Superintendent," he wrote, "thus constrained by paramount " motives affecting the safety of the lives and liberties of all the foreigners here present " in Canton, and by other very weighty causes, do hereby, in the name and on the " behalf of Her Britannic Majesty's Government, enjoin and require all Her Majesty's " subjects now present in Canton, forthwith to make a surrender to me, for the service " of Her said Majesty's Government, to be delivered over to the Government of China, " of all the opium belonging to them, or British opium under their control; and to " hold the British ships and vessels engaged in the trade of opium subject to my " immediate direction, and to forward to me, without delay, a sealed list of all the " British-owned opium in their respective possessions. And I, the said Chief Superin- " tendent, do now, in the most full and unreserved manner, hold myself responsible, " for and on behalf of Her Britannic Majesty's Government, to all and each of Her " Majesty's subjects surrendering the said British-owned opium into my hands to be " delivered over to the Chinese Government. And I, the said Chief Superintendent, " do further specially caution all Her Majesty's subjects here present in Canton, " owners of, or charged with the management of opium the property of British " subjects, that failing the surrender of the said opium into my hands at or before " 6 o'clock this day, I, the said Chief Superintendent, hereby declare Her Majesty's " Government wholly free of all manner of responsibility or liability in respect of the " said British-owned opium."

"And it is specially to be understood that proof of British property, and value of all " British opium, surrendered to me agreeably to this notice, shall be determined upon " principles and in a manner hereafter to be defined by the British Government."

Enclosure 21 in the above letter; page 375 of the correspondence.

The notice was complied with by all British subjects then in Canton, and also, it may be said, by Americans who had the control of British opium, and on the following day, March the 28th, Captain Elliot informed the Commissioner that he held himself responsible to deliver up, in such manner as might be appointed, 20,283 chests of opium belonging to the people of his country; and asked him to accept his solemn pledge that each chest should be delivered up as received, as considerable quantities of the opium were at a distance from Canton. He added, however, that he had no power to require men of other nations to surrender any opium that might be in their possession.

Enclosure 22 in the above letter; pages 375 and 376 of the correspondence.

The Commissioner commended the "sincerity and faithfulness" exhibited, but observed that his orders required the surrender of all opium then in China, and not merely of that stored in the receiving-ships, and that any opium, which was in Canton, or at Whampoa, must also be given up. Orders were issued at the same time to the American, French, and Dutch Consuls to arrange for the surrender of the opium possessed by the merchants of their nations; and Captain Elliot, as

"Superintendent in the foreign factories," was instructed to admonish them, and induce them to comply promptly.

Rules, framed by the Commissioner, Governor, and Deputy-Governor to regulate the time and manner of delivery, were communicated on the same day (28th March). All opium in the foreign factories at Canton was to be made over on the 29th; all at Whampoa on the 30th; and all in the receiving-ships at Lintin, and Macao and at other places in the outer anchorages, between the 31st March and the 2nd April. The British Superintendent and the foreign Consuls were required to write letters, which would be conveyed to the receiving-ships by Chinese officers, directing the persons in charge to make over the opium there stored; and the Commissioner and Governor announced their intention of taking delivery in person of this opium at the Bocca Tigris.

Enclosure 21 in the above letter; page 377 of the correspondence.

Captain Elliot, on the receipt of these Rules, wrote to the Commissioner, promising to arrange for the faithful delivery of the opium in the receiving-ships, as soon as he should be set at liberty, and asking him to trust to his "justice and truth, for the "proper fulfilment of his engagement." He requested also that the native servants might be allowed to return; that British subjects might be allowed to purchase supplies of food, and that communication between Canton and Macao and the outer anchorages might be permitted; guaranteeing that he, personally, would remain in Canton until all the opium was delivered.

Enclosure 24 in the above letter; page 378 of the correspondence.

"With regard," he said, "to opium at Canton and Whampoa, "Elliot and all the "men of foreign nations have already taken most severe proceedings, as your Excel- "lency will find by reference to the late records, when it was faithfully reported that "all was gone. Elliot has now respectfully to announce to your Excellency, that "whilst he, and all the men of his nation, continue prisoners, the disposal of these "matters is not in his hands. For according to the customs of his country, the orders "of persons in confinement are of no avail; thus the ships will not obey his injunctions' "until it be known that he and all the people of his nation are set at liberty."

The Commissioner appears to have been content to drop the question of opium at Canton and Whampoa; but was evidently incensed at the objections made to comply with the orders issued on the subject of the receiving-ships, and directed him to "command "plainly all the foreigners with instant speed to prepare letters, and hand them in to "Government, to enable it to give commands to all the storeships to deliver up in "orderly succession the opium." "The address," he said, "talks too of close restraint, "as if it were imprisonment, which is still more laughable. I find that from the 18th "March, when the commands were given to all the foreigners to deliver up their "opium, everything remained as usual, until the 24th, when you came in a boat to "Canton, and that night wished to take Dent and abscond with him. It was after "this that cruizers were stationed to examine and observe all that went in and out. "It was because you were void of truth and good faith, that it became unavoidably "necessary to take preventive steps. As to the compradores and others they are in "fact Chinese traitors, who would also suggest absconding and escape. How, then, "could the withdrawal of them be permitted? Yesterday, too, when you had made a "statement of the amount of opium, I at once conferred upon you a reward of sundry "articles of food. Is this the manner in which prisoners are ever treated?"

Enclosure 25 in the above letter; pages 378-380 of the correspondence.

Captain Elliot replied, on the 30th March, to this communication, that he had instructed Mr. Johnston, the Deputy Superintendent, to proceed to Lintin, and there make over to the officers of the Chinese Government 20,283 chests of opium; and requested that the licensed passage-boats might be allowed to run, in order that he might proceed to Lintin and carry out the orders.

Enclosure 26 in the above letter; page 380 of the correspondence.

The Commissioner at first demurred to this arrangement, arguing that as Captain Elliot had been able to require British subjects to deliver up all the opium in their possession, he could have no difficulty in issuing orders to the receiving-ships without Mr. Johnston's intervention; directed that the foreigners should write orders for delivery of the opium, as they were in the habit of doing in the ordinary course of business, and that Captain Elliot should see that the letters were written, and should submit them to Government covered by a general order from himself; and promised that trade should be allowed to resume its ordinary course, as soon as the delivery of opium was completed.

Enclosure 27 in the above letter; pages 381 and 382 of the correspondence.

Captain Elliot explained that the merchants had made over the opium to him, and had therefore no power to give any orders in regard to it; that Mr. Johnston's assistance was indispensable to enable him to fulfil his engagement, and that the receiving-ships would be brought to the place required, as soon as he was allowed to proceed to Macao and communicate with the officers in command. The Commissioner

Enclosure 28 in the above letter; page 382-4 the correspondence.

was requested to accept the immediate surrender of a certain quantity of opium, as evidence of sincerity, and to withdraw the embargo on the trade, and the restrictions which had been placed upon the liberty of foreigners at Canton; and a promise was made that, as soon as this was done, Mr. Johnston should deliver from time to time all the opium in the receiving-ships to the full amount of 20,283 chests.

Enclosure 29 in the above letter; page 383 of the correspondence.

This explanation, and the offer which accompanied it, satisfied the Commissioner; and upon the 2nd April he agreed to allow Mr. Johnston to leave Canton, in charge of Chinese officers, to communicate with the receiving-ships and arrange for the delivery of the opium. His previous orders from the 27th March to the 1st April had been communicated under orders by the City Governor or Prefect in this form—"Choo, Prefect of Kwang Chow Foo, issues commands to the English Superin-"tendent Elliot for his full information," but on this occasion he took the unusual course of addressing Captain Elliot direct, and announced himself the terms he was prepared to make, if the 20,283 chests of opium were duly surrendered in accordance with the Superintendent's assurance. "Having reference," he wrote, "to the request that an amount should be named for prior delivery, as an evidence "of sincerity, I have considered that the English opium to be delivered up, amounting "to 20,283 chests, cannot indeed be completely surrendered in one or two days, "and I have therefore determined on the following terms: that when one-fourth "part shall have been delivered, the compradores and servants shall immediately "be restored; when one-half shall have been delivered, consideration being had "thereto, the passage-boats shall be allowed to apply for passes, and upon "examination to run to and fro; when three-fourths shall have been delivered, the "removal of the embargo and freedom of trade shall be at once granted; and when "the whole shall have been surrendered, everything shall return to its ordinary "condition, and a request shall be laid before the throne that encouragement and "reward may be conferred.

"Should the said Superintendent, &c. be unable rightly to give commands to the "storeships, and should error and breach of faith so result, it is requisite, in view of "such a case, to prescribe terms of warning. If there be any erroneous delay for "three days, the supply of fresh water shall be cut off; if for three days more there "be like delay, the supplies of food shall be cut off; and if such delay continue still "three days longer, the laws shall forthwith be maintained and enforced. There can "be no indulgence shown."

Enclosure 30 in the above letter; page 384 of the correspondence.

Captain Elliot accepted these conditions on the understanding that Mr. Johnston should proceed first to Macao, with the Chinese officers, and should then be set at liberty, and allowed to make his own arrangements for bringing the receiving-ships, two at a time, to the prescribed anchorage for delivery of the opium.

Letter from Captain Elliot to Lord Palmerston, commenced on 30th March, and finished on 3rd April, 1839; pages 355–359; and Enclosures 8 and 9 in letter from Captain Elliot to Lord Palmerston, commenced on 6th April, and finished on 4th May, 1839; pages 398 and 399 of the correspondence.

Throughout the whole of this time the foreigners were kept in close confinement and were not permitted to communicate either with Whampoa or with Macao, where the families of Captain Elliot and of many others among the imprisoned merchants were naturally in a state of much anxiety. News, however, was conveyed to and from Canton by Chinese upon scraps of paper concealed in cigars, and in other similar methods. After the 30th March they were permitted to purchase whatever food they required, and to procure supplies of fresh water; but they had no servants, and the rigour of the confinement was in other respects not relaxed. On the 12th April Captain Elliot tried to obtain the release of a British subject, whose child was seriously ill at Macao, but his application was contemptuously rejected.

Writing to Lord Palmerston, on the 30th March 1839, Captain Elliot explained briefly the reasons which had induced him to require the surrender on Her Majesty's service of all opium owned by British subjects in China.

Letter from Captain Elliot to Lord Palmerston, commenced on 30th March, and finished on 3rd April, 1839; pages 355–359 of the correspondence.

"The justification," he wrote, "of this immense responsibility will need more full "development than it would be desirable, or indeed practicable, to make in my present "condition. I am without doubt, however, that the safety of a great mass of human "life hung upon my determination. For if I had commenced with a denial of my "control over the subject, the High Commissioner would have seized that pretext for "reverting to the measures of intimidation against individual merchants, obviously "the original purpose, but which my sudden appearance had disturbed. If I had "persevered in this course of representation, he would have forced the whole into "submission by the protracted confinement of the persons he should determine to "seize; and, judging from the tenor of his proclamation and general conduct, I am "fully warranted in saying by the sacrifice of their lives.

"The forced and separate surrender of all this immensely valuable property by "individual merchants, without security of indemnity and protection, must have led to

" some desperate commercial convulsion in India and England, which might have " embarrassed the Queen's Government in an incalculable degree.

" In a few words then, my Lord, I may say, that I plainly perceived the moment had " arrived for placing the whole weight of the immense difficulties to be encountered on " the only foundation where it could safely rest, namely, upon the wisdom, justice, and " power of Her Majesty's Government."

On the 6th April, Captain Elliot informed Lord Palmerston that he had made up his mind before leaving Macao to "incur very heavy responsibilities" in regard to the ships engaged in the opium traffic; and had seriously considered the expediency of requiring them to leave China, though he had finally decided to refrain from such a measure. He was, he said, convinced that the time had arrived when merchants engaged in the legitimate trade should sever their connexion with that traffic; and thought "that the continuance of the shipping on the spot might " enable them all frankly to meet any advances on the part of the High Commissioner, " with plain and respectful statements, setting forth their readiness to abandon the " further pursuit of the trade entirely; but soliciting time and reasonable opportunities, " upon the ground of the long course of connivance it had enjoyed, and upon the " great impulse it had so lately received by the public preparations of the Imperial " Government to legalise it."

Letter from Captain Elliot to Lord Palmerston commenced on 6th April, and finished on 4th May 1839; pages 385-391 of the correspondence.

" Up to a very late date, my Lord," he continued, " no portion of the trade to China " has so regularly paid its fees to the officers of this and the neighbouring provinces, " high and low, as that of opium; and under all the circumstances of the case, I am " warranted in describing the late measures to be those of public robbery, and of " wanton violence on the Queen's officers and subjects, and all the foreign community " in China . . . . . .

" It was my fixed purpose, when I left Macao, to afford every reasonable satisfaction " concerning the immediate withdrawal of this property, unquestionably drawn here by " a long course of encouragement on the part of this Government, and either to cause " the merchants of my country in trade at Canton, to make solemn promises that they " would abstain from connexion with the opium traffic in future, or myself, on the part of " Her Majesty's Government, to undertake that no reclamation should be made, if they " were forthwith expelled."

The proceedings of the Imperial Commissioner, however, compelled him to abandon all hope of effecting any settlement of the question by the means which he had contemplated.

" His purposes," he wrote, " were plain; and it was my clear duty to let them reach " me, and not the merchants, acting principally for absent men, and therefore wholly " incapable of taking consentaneous courses, or any other than those which would lead " to separate and ruinous surrenders of all this immense mass of property." "The " surrender," he continued " of the property at the first public summons was founded " upon the clear perception that the demand without alternative of any kind, under " the circumstances of strictest and most unprovoked restraint, faithfully described " in my public notice, was an act of forcible spoliation of the very worst description, " justly leaving to Her Majesty the right of full indemnity and future security."

" The situation of this peculiar property has been entirely altered by the High " Commissioner's proceedings; and his continuance of the state of restraint, insult, and " dark intimidation, subsequently to the surrender, has certainly classed the whole case " amongst the most shameless violences which one nation has ever yet dared to " perpetrate against another.

" It is not by measures of this kind that the Chinese Government can hope to put " down a trade which every friend to humanity must deplore; great moral changes can " never be effected by the violation of all the principles of justice and moderation. The " wise course would have been to make the trade shameful, and wear it out by degrees " in its present form. The course taken will change the manner of its pursuit at once, " cast it into desperate hands, and with this long line of unprotected coast, abounding " in safe anchorages, and covered with defenceless cities, I foresee a state of things " terrible to reflect upon.

" Perhaps, indeed, the chief mischief of the actual proceedings is the evil feeling of " revenge they will unquestionably produce in the minds of the class of men, otherwise " disposed to engage in the traffic for the mere love of gain; they will seem to justify " in the consciences of such persons, every species of retaliation. Indeed, I feel, " assured that the single mode of saving the coasts of the Empire from a shocking " character of warfare, both foreign and domestic, will be the very prompt and powerful " interference of Her Majesty's Government for the just vindication of all wrongs, and " the effectual prevention of crime and wretchedness by permanent settlement."

Writing some days later, on the 22nd April, Captain Elliot expressed a confident opinion that the Chinese Government was itself prepared to make some reparation for the forcible confiscation of property, which had been effected; and suggested that the opium surrendered might possibly be made the means of defraying an indemnity. "In my "judgment," he wrote, "the main body of this opium, in fact, all that is saleable, will "be turned to the most advantageous account; I confess I have a suspicion that the "present spoliatory measures will end in the legalization of the trade, upon the footing of "a Government monopoly, with probably some provision for the cessation of imports for "one year, and perhaps a limited and annually decreasing amount after the expiration "of that period. . . . However, without prolonging this course of specu-"lation, I may say that there is no doubt at all of the intention to pay something by "some means.

"Let Her Majesty's Government then think fit to respond to these tidings with "an immediate and strong declaration that it will exact complete indemnity for all "manner of loss; and I am well assured that such a communication alone will so hasten "the purposes of the Chinese Government, and so extend the measure of remuneration "(certainly already intended), that there will be nothing to seek for under that head by "the time that force can reach these coasts. The demand of all others which the "Chinese would least wish to meet at such a moment is one involving money "payment."

The delivery of the 20,283 chests of opium, much of which was not at Lintin, but had been sent for sale along the coast, occupied Mr. Johnston, the Deputy Superintendent, for a considerable time.

Letter from Captain Elliot to Mr. Backhouse dated 3rd July 1839, and Enclosures; pages 5-7 of additional papers (12 pages).

The merchants and their agents surrendered the full quantities of opium, specified in their replies to Captain Elliot's notice of the 27th March, with the exception of two Parsees, whose deliveries were for some reason short of the proper amount by $523\frac{68}{100}$ chests. The opportune arrival of a ship with opium from India, consigned to Messrs. Dent and Company, enabled Captain Elliot to fulfil his obligations; and the firm, at his request, supplied, under a promise of indemnification, the opium required to make good the deficiency. The other opium ships from India remained at Singapore to await the result of the Imperial Commissioner's proceedings, and the arrival of the ship was a fortunate coincidence. Whether the agents of the defaulters sold the opium in ignorance of the arrangements made for its surrender, is not clear; but several of the opium traders were at Macao, and the traffic in the drug does not appear to have been entirely stopped even during the continuance of the Commissioner's violent proceedings.

Enclosure 10 in the letter from Captain Elliot to Lord Palmerston, commenced April the 6th, and finished May the 4th, 1839; pages 399 and 400 of the correspondence.

On the 19th April the Commissioner and Governor issued an edict to Captain Elliot direct, informing him that four of the receiving-ships, which had arrived at the delivering-station on the 18th, had apparently disposed of a considerable portion of their cargoes, and that a Chinese smuggler, who had been apprehended by a preventive boat in the act of selling opium, had admitted, upon examination, that he had purchased the opium on board a foreign vessel on the 10th April. They ordered him therefore to give instructions to Mr. Johnston to bring the remaining receiving-ships at once to the appointed anchorage, and "to restrain the people and seamen of the vessels from "diminishing in the least degree the amount of opium." "The said Superintendent," they wrote, "must not presume on his having at first reported a certain full amount "to let them clandestinely dispose of any quantities, there may be in excess, thereby "occasioning a return of the pervading poison, and so drawing on himself criminality "and cause of sorrow. Tremblingly consider this."

Enclosure 11 in the same letter; page 400 of the correspondence.

Captain Elliot issued orders, as directed, to Mr. Johnston; but pointed out that the business was extensive, and that many persons of low degree were concerned in it, so that it was difficult to entirely prevent irregularities of the nature complained of, while he personally, owing to his confinement at Canton, was unable to exercise any supervision. "When the communications are constantly open," he wrote, "Elliot "will himself be enabled to exercise a more vigilant control. In all his proceedings "he has manifested truth and sincerity, and Your Excellencies will find that to repose "entire confidence in him, so that he may act with effect, is the surest mode of "completing the whole delivery of 20,283 chests, and preventing future irregularity. "Much disorder will always take place when the chief authority cannot exercise "constant control."

This explanation was apparently accepted; and although free communication was not permitted, no further complaints were made regarding the manner in which the delivery of the opium was effected.

Commissioner Lin, who had shown his mendacity by the assertion that the foreigners had only been shut up in Canton in consequence of Captain Elliot's arrival

and attempt to escape with Mr. Dent, did not adhere at all closely to his own promises. In Captain Elliot's words:—"The servants were not faithfully restored when one "fourth of the opium was delivered: the boats were not permitted to run when one-"half was delivered; the trade was not really opened when three-fourths were "delivered; and the last pledge, that things should go on as usual when the whole "was delivered *was* falsified by the reduction of the factories to a prison with one "outlet,—the expulsion of 16 persons, some of them who never dealt in opium at "all, some clerks, one a lad,—and the proposal of novel and intolerable regulations."

Public declaration by Captain Elliot, dated 21st June 1839; Enclosure 1 in a letter from Captain Elliot to Lord Palmerston, dated 17th Nov. 1839; pages 37 and 38 of additional papers. (52 pages).

In the terms which he fixed on the 2nd April, for the withdrawal of all restrictions upon the liberty of the foreigners and for the resumption of trade, the Commissioner said nothing about bonds. As soon, however as the delivery of the opium had been arranged for, he brought forward the question, which was (it must be said) distinctly mooted in his proclamation to the foreigners of the 18th March. On the 4th April, the day following Mr. Johnston's departure, the two senior Hong merchants were deputed to suggest to Captain Elliot, that he and the merchants of the British nation and its dependencies should sign a bond, binding themselves, to "plainly address" Her Majesty the Queen, so that orders might be issued prohibiting the manufacture of opium and the exportation of it to China, and to agree in their own behalf and on behalf of their countrymen to a penalty of confiscation and death in the event of any transgression of the prohibition issued by the Chinese Government against the introduction of opium. The clause containing this drastic proviso was as follows:—"From the commencement of autumn in this "present year any merchant vessel coming to Kwangtung that may be found to "bring opium shall be immediately and entirely confiscated, both vessel and cargo, "to the use of Government; no trade shall be allowed to it, and the parties shall "be left to suffer death at the hands of the Celestial Court; such punishment "they will readily submit to."

Letter from Captain Elliot to Lord Palmerston, commenced on the 6th April, and finished on the 4th May 1839; pages 385-391; and Enclosure 1 in the same letter; pages 391 and 392 of the correspondence.

Several of the foreign merchants of all nations had, it may be noticed, replied on the 25th March to the Commissioner's proclamation of the 18th, pledging themselves, as individuals, neither to deal in opium, nor import it into China, but pointing out that questions, affecting national interests, could only be settled by the representatives of their respective nations; but the Commissioner took no notice of the communication.

Enclosure 7 in the same letter; pages 397 and 398 of the correspondence.

Captain Elliot, who was evidently taken aback by this demand, returned the draft of the proposed bond to the merchants, and sent no reply to an order, which he received on the following day, from the City Governor, directing him to require all the foreigners to execute bonds at once. On the 6th April, however, the Imperial Commissioner issued commands to him direct, commending his conduct in regard to the surrender of the opium, and ordering him to arrange for the execution of the bonds required by all British subjects at Canton.

Letter from Captain Elliot to Lord Palmerston; pages 385-391 of the correspondence.

Enclosure 3 in the same letter; pages 393 and 394 of the correspondence.

Captain Elliot replied on the 8th April that he was unable consistently with the laws of his country to require the execution of any such instruments. "The bonds," he said, "have relation to the future, and would involve terrible responsibilities in any "possible case of disobedience to the prohibitions. They would involve, too, not alone "parties themselves, but others also. Such bonds it is impossible even for his "honoured Sovereign to require; and how much more must it be out of the power of "Elliot himself to require them."

Enclosure 4 in the same letter; page 394 of the correspondence.

Further correspondence ensued, but Captain Elliot was firm in his refusal, and, on the 20th April, he tore up in the presence of the Hong merchants a direct communication from the Imperial Commissioner and Governor, which they had been ordered to deliver, reiterating the demand for the execution of the bonds; and desired the merchants to inform the Commissioner and Governor, "that they might take *his* life as "soon as they saw fit; but that it was a vain thing to trouble themselves or *him* any "further on the subject."

Letter from Captain Elliot to Lord Palmerston; pages 385-391; and Enclosures 5 and 6; pages 395-397.

"Elliot," he wrote, in reply to the Commissioner and Governor, on the 20th April, "has been appointed by his Government for the special purpose of superintending the "people of his country resorting hither for trade. But finding now that the high "officers absolutely require compliance with new regulations and terms, which they "have fixed for the trade of his country with China, and these being such as it is "impossible for him to consent to, he has therefore the honour to request that he may "be enabled, at the head of the men and ships of his country, to take his departure "and sail away. Elliot still most faithfully pledges himself to deliver up to the high "officers all the opium which he lately took from the English people in Her Majesty's "name."

Enclosure 12 in the same letter; page 401 of the correspondence.

This reply, and the message sent through the Hong merchants, apparently convinced the Imperial Commissioner that Captain Elliot was determined not to yield the point, and the demand was accordingly dropped for the time.

The Americans and other European traders to Canton were also required to execute similar bonds; and although the Consuls at first objected, the Americans at any rate eventually yielded and complied with the requisition.

Letter from Captain Elliot to the Portuguese Governor of Macao, dated 13th April 1839; pages 406 and 407 of the correspondence.

The proceedings of the Imperial Commissioner soon satisfied Captain Elliot, that there was no hope of the peaceful re-establishment of British commerce at Canton upon any reasonable footing, and on the 13th April he contrived with some difficulty to send a letter to the Governor of Macao, in which he placed himself and all Her Britannic Majesty's subjects, ships, and property under the protection of the Portuguese Government, and offered assistance, both in men and money, to place the settlement and harbour in a state of defence, and to equip a sufficient number of armed vessels to keep the coast clear from the Chinese.

Letter from CaptainElliot to Lord Auckland, Governor-General of India dated 16th April 1839; pages 408 and 409 of the correspondence.

On the 16th April also he wrote to the Governor General of India, informing him of the recent occurrences at Canton, and of the offer to co-operate in the defence of Macao which he had made to the Portuguese Governor, and applying for the immediate despatch from India of as many ships of war and armed vessels as could be spared, for the protection of the life and property of British subjects in China.

Letter from the Portuguese Governor to Captain Elliot, dated 15th April 1839: page 408 of the correspondence.

The Portuguese Governor was unwilling to commit himself with the Chinese Government, by accepting assistance for the defence of the settlement without more satisfactory proof of its necessity; and on the 15th April he replied to Captain Elliot, declining politely his offer of co-operation, on the ground that he was bound to maintain a strict neutrality, but repeating the assurance, which he had given on the 22nd March, to the effect that he would protect, as far as he was able, the lives and property of British subjects in Macao as long as they were not engaged in any contraband traffic.

Letter from Captain Elliot to Lord Palmerston, dated 6th May 1839; pages 405 and 406 of the correspondence; and evidence of Mr. Matheson before the Select Committee of the House of Commons on the Chinese Trade in 1840.

The Portuguese took advantage of the pre-occupation of the Imperial Commissioner at Canton to send away their opium, of which they possessed about 2,000 chests, to Manilla; and when his attention was turned to Macao, they were able to satisfy him by executing bonds, binding themselves to bring no more opium into the settlement. The opium sent to Manilla was said to have been subsequently sold at a large profit on the east coast of China.

Order by the Prefect or City Governor of Canton and other magistrates to Captain Elliot, dated 4th May 1894; pages 401–403 of the correspondence.

By the 4th May, the greater part of the 20,283 chests of opium owned by British subjects had been surrendered; and the Imperial Commissioner and Governor of Canton directed that the blockading vessels, and the guards stationed at the factories, should be removed, and that boats, registered as "obedient" should be allowed, subject to examination by officers deputed for the purpose, to pass to and fro between Canton and Whampoa; and issued orders, permitting Captain Elliot and other foreigners to leave Canton, with the exception of 16 persons, who were said to have been for a long time habitual traders in opium, and who therefore were detained. Merchant ships at Whampoa were allowed to trade and to leave the port; but ships which had arrived in the course of the proceedings and were then in the "outer-seas," were required to remain there, pending settlement of the business in hand, and were not permitted to enter the port.

Public notice by Captain Elliot to British subjects, dated 4th May 1839; page 403 of the correspondence.

Captain Elliot, on receipt of these orders, drew the attention of British subjects to the notice, which he had issued on the 23rd March, advising them to proceed with their property to Macao, but announced his intention of remaining at Canton until he had fulfilled completely his obligations to the Chinese Government.

Letter from Captain Elliot to Lord Palmerston, dated 6th May 1839; pages 405 and 406 of the correspondence.

On the 6th May also he wrote to Lord Palmerston, informing him of the rumoured intention of the Imperial Commissioner to occupy Macao with Chinese troops, and recommending that an arrangement should be effected with the Government of Portugal for the cession of the settlement to the British Government, or for its effectual defence by British arms, and "appropriation to British uses." "The "safety of Macao," he wrote, "is, in point of fact, an object of secondary moment to "the Portuguese Government; but to that of Her Majesty it may be said to be of "indispensable necessity, and most particularly at this moment."

Enclosures 2–5 in a letter from Captain Elliot to Lord Palmerston, commenced on the 18th and finished on the 29th May 1839; pages 412–415 of the correspondence.

On the 8th May the City Governor, under the direction of the Imperial Commissioner and Governor of Canton, ordered Captain Elliot to expel Mr. Innes from the Chinese Empire, as a seizure of opium made by the Portuguese at Macao showed that he was unmindful of the lenity that had been shown to him, and was still engaged in smuggling.

Captain Elliot considered that the demand for Mr. Innes' expulsion was justified by the circumstances; and on the 9th May he submitted an address to the Commissioner and Governor informing them of his intention to require him to depart forthwith.

He then on the same day issued an order charging Mr. Innes by his duty to the Queen to leave China as soon as possible, and wrote to the Portuguese Governor, requesting him to withdraw his protection, and to require Mr. Innes to leave Macao within 24 hours.

Letter from Captain Elliot to Lord Palmerston, dated 14th June 1839, and enclosures; pages 420-427 of the correspondence.

This order led to a sharp controversy between Captain Elliot and Mr. Innes, which need only be briefly referred to. Mr. Innes did not deny that he had continued to sell opium at Macao up to the 11th April, but disputed the accuracy of the facts as stated by the Chinese, and protested strongly against the order which Captain Elliot had issued for his expulsion, urging that, although he did not expect protection from the British Government for any loss or inconvenience he might sustain in the course of his contraband dealings, the Superintendent had no right to use his influence to assist the Chinese, and bring pressure to bear upon the Portuguese Governor. Captain Elliot, however, would not withdraw his order; and Mr. Innes was compelled to leave Macao. On the 8th June 1839, he submitted a petition from Macao roads to Her Majesty the Queen in Council, on the subject of Captain Elliot's proceedings, which contained a remarkable account of the manner in which he had carried on his business in opium in China.

"That your petitioner," he wrote, "has been 13 years resident in China, during "which period he has traded considerably in opium, which traffic has been likewise "followed by at least nine-tenths of your Majesty's subjects resorting to China. That "your petitioner in the above period has sold opium to the licensed Hong merchants, "and has delivered opium to the boats of His Excellency the Governor of Canton and "to many other Government officers, &c., &c."

Captain Elliot, it appears, was prepared to arrest Mr. Innes, it a continued defiance, on his part, of the authority of the Chinese Government should endanger the safety of British subjects in China, but the necessity for such a measure did not arise; and whether Mr. Innes left China, or conducted his business in the future with greater caution and moderation, the incident, so far as it affected the relations between the Chinese and the British Government, was closed by the issue of Captain Elliot's orders of May 9th, and by the expulsion of Mr. Innes from Macao.

Public notice by Captain Elliot to British subjects dated 11th May 1839; pages 410 and 411 of the correspondence.

On the 10th May an edict was communicated to Captain Elliot, and to the American and Dutch Consuls, announcing formally the law of the Chinese Empire on the subject of the importation of opium. "By this law," said Captain Elliot, in a notice issued to British subjects, "the ships and crews of all nations, henceforward arriving in China, "are liable to the penalties, the first of confiscation, and the last death, upon the "determination of this Government that they have introduced opium. . . . . It "will be particularly observed that persons remaining are understood by the "Government to assent to the reasonableness of the law."

Letter from Captain Elliot to Lord Palmerston commenced on the 18th and finished on the 29th May 1839; pages 409-411 of the correspondence.

This edict was followed by a series of drastic measures, designed to control and repress the foreigners effectually for the future. A strong paling was constructed round the factories, shutting off the foreigners from access to the river, and leaving open only one avenue of communication with the city, at the head of which a strong guard was posted; the pleasure boats used for excursions on the river were taken away, and a number of intolerable* regulations, which were said by Captain Elliot to be inconsistent with any possibility of carrying on trade at Canton, were introduced. Measures also were taken to prevent entirely all unlicensed trading, and to re-establish in full vigour the Hong monopoly. The houses near the factories of the outside (*i.e.*, unlicensed) merchants and shopkeepers, with whom the foreigners had often extensive dealings, were ordered to be thrown down, and the streets in which these merchants and shopkeepers resided were to be closed and built over.

Orders at the same time were issued for the expulsion from China of six of the sixteen persons detained at Canton as being noted traders in opium, Mr. Dent, four gentlemen connected with the firm of Jardine, Matheson, and Co., and a Parsee.

Letter from Captain Elliot to Lord Palmerston dated 8th July, 1839, and Enclosure 1; pages 427 and 428 of the correspondence.

On the 18th May the delivery of the 20,283 chests of opium was completed by Mr. Johnson, and a formal acknowledgment of receipt was given to him by the City Governor. News of this transaction reached Captain Elliot at Canton on

* One regulation appears to have prescribed the manner in which Chinese trading junks should be built and appointed; and the name of every sailor in a junk was to be written in clear characters upon the sail. (Evidence of Mr. Inglis before the Select Committee of the House of Commons upon the China Trade in 1840. —Q. 621.)

the 21st, and an edict was issued by the Governor soon after, permitting the merchant ships, which had arrived in the "outer-seas," to enter the port, but stating that the regulations, under which the trade was to be conducted, would be announced after their arrival at Whampoa, and requiring the ten remaining proscribed persons to leave China, and to give a promise in writing not to return. The promise was given, by Captain Elliot's advice, on the understanding that the matter should form the subject of special negotiation with the Chinese Government, in the event of any opportunity arising; and the gentlemen in question left Canton, and proceeded to Macao.

Letter from Captain Elliot to Lord Palmerston, commenced on the 18th and finished on the 29th May, 1839; pages 409–411 of the correspondence.

None of the British merchant ships that were in the outer seas entered the port to avail themselves of the Governor's permission to trade, and Captain Elliot, as soon as he heard of the Governor's edict, which was not officially communicated to him, issued a notice to the commanders enjoining them not to enter.

Enclosures 7 and 8 in the above letter; page 417 of the correspondence.

On the 24th May Captain Elliot left Canton for Macao, informing the Governor of his intention, and mentioning the fact that he was in bad health. The Governor, in his reply, showed that he was not insensible to the efforts which Captain Elliot had made to meet the wishes of the Chinese Government. "Before, at the time of "removing the guard," he wrote, "it was directed that the said Superintendent "should leave Canton, in order to conduct the delivery of the opium; but, on the "ground that all the foreigners remaining at Canton still required to be controlled "and restrained, he did not at once prefer his request to depart. At this time, being "in bad health, he has presented his address of leave. It is surely right that he "should be permitted to go to Macao, that he may be enabled to receive medical "treatment.

"At present, although the opium has been all delivered to the amount before "stated, yet the High Commissioner and I, the Governor, have still many matters "regarding which to direct him to act. The Superintendent having a respectful "sense of duty, and being able in action, must hasten to recover his health speedily. "He must not delay, and while he has been ready at the first, be found lacking at the "last.

"Let him also, on his arrival at Macao, faithfully and truly examine, and, if the "foreigners, of every nation, residing at Macao are guilty of secreting any opium, "he must instantly command them, one and all, to deliver up the entire quantity."

Memorial from British subjects to Lord Palmerston, dated 23rd May 1839; pages 418–420 of the correspondence.

The British merchants in China followed Captain Elliot's advice and example, and withdrew in a body to Macao. Before leaving Canton, Dent & Co., and other English firms, and a number of Parsees, submitted a temperate and well-reasoned memorial to Lord Palmerston, urging upon Her Majesty's Government the importance of an early recognition of their claims on account of the opium surrendered for Her Majesty's service, "and the pressing and paramount necessity of placing the general trade of "British subjects upon a secure and permanent basis." The memorialists, after drawing attention to the facts, that no penalties had ever been enforced against foreigners importing opium into China, and that the laws prohibiting its importation were admitted by the Imperial Commissioner himself to have been "comparatively lax," continued as follows: "We may further state that the peculiar character of the "opium trade was distinctly recognised in the Report of the Select Committee of the "House of Commons in 1830, and that, in the subsequent Report, in 1832, the "Committee expressed their opinion that it does not seem advisable to abandon so "important a source of revenue as the East India Company's monopoly of opium in "Bengal. We conceive it will, therefore, be admitted that British subjects have "carried on this trade with the sanction, implied, if not openly expressed, of their "own Government; and at the same time with an advantage to the revenue of British "India, varying of late years from one to one and a half millions sterling.

"We do not attempt to deny the unquestionable right of the Chinese Government to "put a stop to the importation of opium, and have readily signed an agreement to "abstain from that trade at Canton on the first requisition of the Government to that "effect; but we think your Lordship will perceive that long prescription had hitherto "given foreigners ample reason to question the sincerity of the Chinese Government "with regard to the discontinuance of the importation; and that under any circum-"stances that Government cannot be justified by the lax observance of prohibitions "and open connivance of its officers, in at one time fostering a trade involving several "millions sterling, and at another rendering its pursuit a pretext for spoliation.

Letter from Captain Elliot to Lord Palmerston, commenced on the 18th and finished on the 29th May 1839, pages 409–411 of the correspondence.

An order received from the Imperial Government, on the day that Captain Elliot left Canton, directing that the opium surrendered should be sent to the capital, increased his suspicions as to the manner in which it would be disposed of. The expense of the transport to Pekin would, he said, be at least a quarter of a million

of dollars, and it naturally seemed incredible that such expense would be incurred for no purpose. The opium, however, was destroyed effectually at Canton under the Imperial Commissioner's own supervision, and Mr. King, an American gentleman, who objected on principle to the opium trade, and took therefore no part in it, appears to have witnessed a portion, at any rate, of the process. Captain Elliot also, on the 21st June 1839, said that the measures of the Imperial Commissioner had given an "immense impulse to the traffic in opium," and the remark can only be explained, on the supposition that the opium was destroyed, and that the price of the drug in China rose largely in consequence.

"The Middle Kingdom," by Dr. Wells Williams; and evidence of Mr. Inglis before the Select Committee of the House of Commons upon the China Trade in 1840.

Public declaration by Captain Elliot, dated 21st June 1839; pages 37–39 of additional papers (52 pages).

The departure of the English to Macao appears to have increased the tension, which already existed, between Captain Elliot and the Imperial Commissioner. The proscribed persons did not at once leave China, and the receiving-ships, which had delivered opium, were not removed from the outer seas; but the real cause of the rupture appears to have been Captain Elliot's refusal to agree to the bonds required. Captain Elliot tried to carry out his idea of establishing the headquarters of British trade at Macao, and successfully exerted his influence with his countrymen to keep British ships outside the Bocca Tigris. The Imperial Commissioner, not unnaturally, resented this, and although Captain Elliot offered further protestations of his readiness to separate the licit from the illicit trade, the Commissioner refused to receive his addresses, presented sealed in the manner agreed to by the Governor of Canton on the 25th April 1837, and attempted to induce the British merchants, captains, and seamen to disregard Captain Elliot's injunctions, and proceed to Canton. He attached also public proclamations to the walls of Macao giving his version of the occurrences, which had led to the suspension of trade and intercourse, and sent copies of the proclamations to the British ships.

Letter from Captain Elliot to Lord Palmerston, dated 27th Aug. 1839; pages 433 and 434 of the correspondence; and address from Captain Elliot to the Imperial Commissioner and Governor of Canton, dated 2nd Sep. 1839; page 460 of the correspondence.

Captain Elliot responded by publishing a manifesto to the Chinese, explaining his conduct on the 21st June, and communicated a copy of it under a public notice to British subjects. "The merchants and ships of the English nation," he wrote in the manifesto, "do not proceed to Canton and Whampoa, because the gracious commands "of the Emperor for their protection are set at nought; because the truth is concealed "from His Imperial Majesty's knowledge; because there is no safety for a handful of "defenceless men in the grasp of the Government at Canton; because it would be "derogatory from the dignity of their Sovereign and Nation to forget all the "insults and wrongs which have been perpetrated, till full justice be done, and till the "whole trade and intercourse be placed upon a footing honourable and secure to this "Empire and to England. That time is at hand: the Gracious Sovereign of the English "Nation will cause the truth to be made known to the wise and august Prince on the "throne of this Empire; and all things will be adjusted agreeably to the principles of "purest reason."

Public declaration and notice to British subjects by Captain Elliot, dated 21st June 1839; pages 37–39 of additional papers (52 pages).

The trade between Great Britain and China was not interrupted. British merchant ships remained outside the port, and the Americans, who had executed bonds as required by the Imperial Commissioner and had therefore remained at Canton, acted as carriers both of British goods and China produce between Hong Kong and Canton. Captain Elliot did not regard this form of trade with any favour, and moved the Governments of Great Britain and India to prohibit the importation of tea and other produce of China in British ships entering the port of Canton in violation of his injunctions, or in foreign vessels, until such time as he should declare the port of Canton safe for British trade. Circumstances, however, were too strong for him. The uncertainty, which existed, stimulated speculation in China, and the prices of foreign goods were high, and British merchants, though unwilling to enter the port and place themselves in the power of the Chinese, were not prepared to sacrifice their commercial interests to political considerations.

Letter from Captain Elliot to Lord Palmerston dated 28th Nov. 1839; page 43–45 of additional papers (52 pages).

Public notice by Captain Elliot, dated 25th July 1839; pages 451 and 452 of the correspondence.

Letter from Captain Elliot to Lord Palmerston dated 28th Nov. 1839; pages 43–45 of additional papers (52 pages).

The stringency, with which the policy of prohibition was enforced at Canton, merely had the effect of transferring the traffic in opium to Fuhkien and other parts of the Chinese coast, which were less efficiently protected, and the destruction of the opium surrendered caused the price of the drug to rise and increased the profits of the smugglers.

Letter from Captain Elliot to Lord Palmerston dated 18th July 1839, and enclosure; pages 431 and 432 of the correspondence.

At this juncture an affray took place, on the 7th July, at Hong Kong between a party of British and American seamen and the natives, and a Chinese named Lin Weihe was killed. Captain Elliot recognised at once the danger of the position, and tried vainly to take such measures as would satisfy the authorities, and prevent any demand for the surrender of an Englishman for trial, or, in other words, for execution. He advanced, at his own risk, a sum of 1,500 dollars to the family of the deceased, an act of liberality, which at once produced

unsolicited a written declaration that the man's death had been caused by accident; and offered rewards on behalf of the British Government to any person, who should adduce evidence leading to the conviction of any British subject or subjects for causing the death of the Chinese, or for instigating or promoting the riot.

Official communications from Captain Elliot to the officers deputed by the Imperial Commissioner, dated 13th and 21st July 1839; pages 440 and 441 of the correspondence.

Officers were deputed to Macao by the Imperial Commissioner to make inquiries in regard to the occurrence; and Captain Elliot at once opened communication with these officers, informed them of the steps he had taken, and assured them that the offender would, if discovered, be tried in accordance with the laws of Great Britain. "The "Government of the English Nation," he said, "would hold Elliot deeply guilty if he "failed to prosecute this affair with the utmost severity."

The Chinese officers, however, appear to have intentionally affronted Captain Elliot, and published edicts inciting the British merchants and seamen to disregard his authority; and on the 21st July Captain Elliot informed them that he would not receive any communications, until he should be satisfied that there would be no repetition of such proceedings, and until the higher officers of Government should think fit to receive his "sealed addresses according to custom."

He continued, at the same time, his own inquiries; and, as six British seamen were apparently concerned in the fatal affray, he ignored all difficulties of jurisdiction, and proceeded to try the men himself, so as to afford all possible satisfaction to the Chinese Government.

Letter from Captain Elliot to the Macao District Magistrate, dated 3rd Aug. 1839; page 441 of the correspondence.

The Chinese Magistrate at Macao was informed that the trial would be held on the 12th August at Hong Kong, and that, if any officers were deputed to attend, they would be received with the respect due to their rank; but the Magistrate took no notice of the intimation, and no Chinese officers attended.

Letter from Captain Elliot to Lord Palmerston, dated 27th Aug. 1839; pages 433 and 434 of the correspondence.

At the trial a boatswain, to whom suspicion attached, was indicted for murder, but the grand jury constituted for the occasion ignored the bill. Five other seamen were found guilty on charges of rioting and of rioting and assault, and were sentenced, two of them to imprisonment with hard labour for three months and to a fine of 15*l.* each, and the other three to imprisonment with hard labour for six months and to a fine of 25*l.* each.

Communication from Captain Elliot to the Chinese Magistrate of Macao, dated 16th Aug. 1839; pages 441 and 442 of the correspondence.

The result of the proceedings was communicated to the Macao Magistrate on the 16th August; and Captain Elliot declared solemnly that he had not been able to discover the person, or persons, who had caused the death of the Chinese. He made it clear, however, that the trial had been held in order that the guilty persons, if discovered, should be punished in accordance with the laws of Great Britain, and that the surrender of any British subject for trial by the Chinese was out of the question.

Letter from Captain Elliot to Lord Palmerston, dated 27th Aug. 1839; pages 433 and 434 of the correspondence.

The Imperial Commissioner was not satisfied. He moved to Heangshan, 40 miles from Macao, with 2,000 men; stopped the supply of provisions to the English at the Portuguese settlement; compelled their Chinese servants to leave them, and threatened to cut off the supplies of the Portuguese also, if they should continue to assist and protect the English.

Captain Elliot, therefore, after consultation with the Portuguese Governor, left Macao, on the 24th August, for Hong Kong, in the hope that his departure would induce the Imperial Commissioner to adopt a less threatening attitude.

Enclosures 2–7 in a letter from Captain Elliot to Lord Palmerston, dated 27th Aug. 1839; pages 435–439 of the correspondence.

A British passage-boat the "Black Joke," which was on its way from Macao to Hong Kong, was attacked, on the evening of the 24th, while at anchor at Lantao, by seven Chinese rowing boats manned and armed like those of the mandarins. Seven of the eight lascars who composed the crew, were killed, and the tindal (or captain) only saved himself by jumping overboard and clinging to the rudder. A British subject, named Moss, who was on board as a passenger, was brutally maltreated; and the Chinese, after carrying away several cases containing goods and personal effects, tried to blow up the vessel with gunpowder. They failed, however, in this attempt, and the unexpected appearance of another English vessel caused them to leave the schooner and depart. Mr. Moss had one of his ears cut off and received three stabs in one arm, and the ear, which was severed, was thrust into his mouth. A mandarin cap was found on board the "Black Joke" after the departure of the Chinese, and the vessel was not completely plundered, some cash, besides other property, being left on board. It was, therefore, supposed by some persons that the attack was made under official direction; and Captain Elliot, in December 1839, mentioned a rumour that the mandarin in command had been specially rewarded by the Imperial Commissioner for his services. Subsequent events lent some colour to this theory, but at the time that the outrage occurred Captain Elliot and others were of opinion that it was the work of pirates, who had been rendered daring by the confusion which existed; and the Chinese authorities are entitled to the benefit of the doubt.

Letter from Captain Elliot to Lord Palmerston, dated 6th Dec. 1839; pages 45–47 of additional papers (52 pages).

Another British schooner was, it may be added, chased by Chinese boats on the same evening, and in the same neighbourhood.

Captain Elliot's departure from Macao failed to appease the Commissioner. Edicts were posted on the walls of the town on the 25th August, which announced once more the laws, which had been enacted to prevent the importation of opium; insisted upon the immediate surrender of the murderer of Lin Weihe, and on the departure from China of all ships, which were not prepared to enter the port and discharge their cargoes at Whampoa; and threatened severe punishment to Chinese boatmen in the event of their supplying provisions to foreign ships lying outside Canton. Ships bringing opium to China in ignorance of the law, within 18 months of the date of the edicts, were to be allowed to trade on surrender of the opium; but any person concerned in the importation of opium after that time was to be punished with death; if a principal by decapitation, and if an accomplice, by strangulation.

Enclosure 3 in the letter from Commissioner Lin and Pu-ting-chiu, dated 27th August 1839; page 436 of the correspondence.

Edicts dated 25th August 1839; pages 439 and 440 of the correspondence.

The Portuguese Governor and Procurador were ordered to expel the English from Macao, and were informed that Chinese soldiers and police had been deputed to seize and punish any that remained. "So soon," it was said, "as the English be brought "to repentance, and deliver up the murderer, and when their merchant ships shall "have gone up to Whampoa, and the storeships and the foreigners (the 16 proscribed), "shall have returned to their country, their Excellencies will certainly grant them "the special favour of continuing their trade as formerly; and you, the Portuguese, "when you receive permission to trade with the English, you can then rent them your "houses as heretofore."

Enclosures 1, 2, and 6 in the letter from Captain Elliot to Lord Palmerston, dated 27th August 1839; pages 435 and 438 of the correspondence.

Another order followed, which contained a threat that the houses of British subjects would be surrounded on the night of the 25th August; and although the Portuguese Governor announced his intention of resisting forcibly any such measure, he was so much intimidated that he professed himself unable to afford protection to the English any longer. The English, therefore, were forced to fly from Macao on the morning of the 26th August, leaving their sick only behind in the Portuguese hospital, and to take refuge at Hong Kong, where Captain Elliot was anxiously awaiting their arrival, and a fleet of nearly 50 sail of British merchant ships was already assembled. H.M.'s sloop "Larne" had left China some time before, and Captain Elliot accordingly assumed military command, and made such preparations as were necessary to prevent a surprise of the fleet by Chinese war junks or fire-ships.

Letter from Captain Elliot to Lord Palmerston, dated 27th August 1839; pages 433 and 434 of the correspondence.

The departure of the English was said by the Chinese Magistrate of Macao, with evident satisfaction, to have been "precipitate and confused;" and the Portuguese Governor and Procurador were commended for the assistance which they had given in their expulsion, and were prohibited from supplying provisions to them at Hong Kong, under pain of severe punishment.

Official communication from the Keun-Min-Foo to the Portuguese Governor of Macao, dated 25th August 1839; page 441 of the correspondence.

The "respectful sense of duty" shown by the Portuguese was also specially commended by the Imperial Commissioner and Governor in a subsequent order.

Official communication from the Chinese officers at Macao to the Procurador, dated 29th August 1839; pages 5 of translation of official papers (12 pages).

The Portuguese Governor (according to his own account), replied to the Macao Magistrate's communication that the English had departed of their own free will; and although he was naturally afraid to offend the Chinese, he appears to have done as much as he could, up to the end of August, to assist the English without committing himself to one side or the other in the quarrel.

The Imperial Commissioner and Governor, on receiving the news of the departure of the English from Macao, issued a proclamation, on the 31st August, to the inhabitants of the Chinese villages along the coast, informing them that orders had been issued to cut off all supplies of water and provisions from the English, and directing them to arm themselves and prevent the English from landing to obtain either food or water, or to create disturbance. "If," it was said, "any of the said foreigners be found "going on shore to cause trouble, all and every of the people are permitted to fire "upon them, to withstand and drive them back, or make prisoners of them."

Proclamation by the Imperial Commissioner and Governor of Canton, dated 31st August 1839; pages 455 and 456 of the correspondence.

The proclamation summed up effectively enough the grievances, real and supposed, of the Chinese against the English. "Whereas," it was said, "the English foreigners, in "their overbearing pride and unpracticability, have withstood the prohibitory enact-"ments, those depraved individuals, who deal in opium, have continued to linger at "Macao; the empty storeships, which have surrendered their opium, have thus long "remained anchored in the outer seas; and newly arrived merchant vessels, neglecting "to surrender what opium they have brought, have collected together at Hong Kong "and the neighbourhood, neither entering Whampoa nor yet sailing back again, "whereby occasion was given in a drunken brawl to cause the death of Lin Weihe, "one of the people of the Empire; and whereas we, the Commissioner and the "Governor, having reiteratedly issued commands to the Superintendent Elliot justly

" to investigate and take proceedings therein, he has still withstood us, has not " received our commands, and has sheltered and failed to deliver up the murderer, " &c., &c."

Letter from Captain Elliot to Lord Palmerston, dated 3rd-7th Sept. 1839; page 442 of the correspondence.

The merchant ships were not left long without protection; as Her Majesty's ship " Volage," with Captain Smith in command, arrived opportunely at Hong Kong a day or two after the flight from Macao, bearing despatches from the Naval Commander-in-Chief in the East Indies, authorising Captain Elliot to offer the Portuguese Governor any assistance, he might require, to place Macao in a state of defence and repel any act of aggression, that might be attempted, by the Chinese. Captain Elliot accordingly, with the concurrence of Captain Smith, wrote to the Governor of Macao on the 1st September, proposing that British subjects should return to the settlement, and offering to place a force of 800 or 1,000 men at his disposal at once for the defence of the place.

Enclosure 1 in the above letter; page 443 of the correspondence.

Enclosure 3 in the above letter pages 445 and 446 of the correspondence.

The Governor was evidently glad to be rid of a disagreeable and dangerous responsibility; and in his reply, dated 3rd September, he declined politely the proffered assistance, informing Captain Elliot that, as the English had left Macao of their own accord, they could not be permitted to return, until their difficulties with the Chinese should have been satisfactorily adjusted.

" The British subjects," he wrote, " retired of their own accord from Macao, with a " view of not compromising this establishment, and by this step have placed them- " selves under the necessity of not landing here so long as all the difficulties now " existing shall continue unsettled; which difficulties the undersigned hopes to see " terminated satisfactorily for all parties, it not being allowable for him to vary in " anything from the maintenance of the neutrality above stated, until he shall receive " express orders from his Government in that respect."

Enclosure 1 in a letter from Captain Elliot to Lord Palmerston, dated 5th Sept. 1839; page 448 of the correspondence.

On the 2nd September a notice was found posted on shore at Hong Kong to the following effect: " Poison has been put into this water, which will destroy the bowels " if it be drank. Let none of our people take it to drink." Captain Elliot accordingly issued a proclamation to the natives, informing them that he would be responsible for the preservation of the peace as long as provisions and water were supplied, but that a conflict would inevitably result, if provisions were not forthcoming and the water was poisoned, and pointing out that such inhumanity was an unworthy return for the kindness, which had been frequently shown by the British to shipwrecked Chinese, of whom " several hundreds " had been saved and restored to their homes since he had been in China.

Postscript to the above letter, page 447; and enclosure 5 in the letter: page 450 of the correspondence.

An edict from the Imperial Commissioner and Governor, which reached Captain Elliot about this time, was refused in consequence of his resolution to receive no more official communications; but he took the opportunity to forward in reply by the messenger, who brought the edict, a strong remonstrance in writing against the recent proceedings of the Chinese Government. " Is it," he wrote, " consistent with peace, " or with the dignity of the Empire, to drive forth from their houses, and to deprive " of supplies of food, and of attendance, women in the pains of child-birth, sick " persons, and young children, upon the pretext that Elliot does not deliver up a man " to be killed, although he has solemnly and repeatedly declared that he has strictly " investigated, according to the laws of his country, and that he is unable to discover " who the guilty man is; and although it is most certain that the seamen of American " ships were on shore, and engaged in the riot which led to this disaster. Is it desired " that Elliot should deliver up any man indiscriminately, and involve the higher " officers, as well as himself, in the guilt of murdering an innocent man?"

The hostile spirit, which had prompted the attack on the " Black Joke," and the poisoning of the water at Hong Kong was, he suggested, a result of the incitements to violence contained in the inflammatory proclamations recently published at Macao; and the interruption of official communication was ascribed to the refusal of the Imperial Commissioner to receive his sealed addresses, and to the measures which he had taken to deprive the English both of servants and food, and to inflame the Chinese people against them.

" Let these things," he concluded, " be adjusted, and Elliot is ready immediately to " open honourable and friendly communication with the officers, and use his sincerest " efforts to settle all things according to the principles of reason and justice, upon the " basis of effectually separating the lawful trade from the unlawful, and of securing " the faithful payment of the Imperial duties by the British ships."

Letter from Captain Elliot to Lord Palmerston dated 5th Sept. 1839; and enclosures 2, 3,

On the 4th September Captain Elliot proceeded with Captain Smith to Kowlune, a place about four miles distant from the anchorage of the British ships at Hong Kong, where four men-of-war junks were stationed, which prevented a regular supply of

provisions. Captain Elliot was in his own cutter, and was accompanied by a small armed vessel, named the "Pearl," and by the pinnace of the "Volage." The junks were found at anchor under the cover of a battery; and Captain Elliot sent the the Rev. C. Gutzlaff to the largest of the junks to explain that several thousand British subjects at Hong Kong were in want of supplies of food, and that "frequent conflicts" must ensue, if they were not permitted to procure them. Mr. Gutzlaff was received without rudeness; but after a discussion, which lasted for five or six hours, he was informed that nothing could be done without the sanction and orders of the Imperial Commissioner. A promise was indeed held out that some food would be supplied, as a present without payment, to relieve their immediate necessities; but, in Mr. Gutzlaff's opinion, this was merely a ruse to gain time to man the fort, where numbers of Chinese were seen to be assembling. Captain Elliot then sent some men in a boat to a distant part of the bay to purchase food; and this they successfully accomplished, and were in the act of bringing their purchases away when some mandarin peons arrived and prevented them from doing so.

and 4; pages 446–449 of the correspondence.

Captain Elliot's patience was exhausted, and he opened fire upon the junks from his cutter and the other two vessels. The Chinese replied to the fire, both from the battery and from the junks; and after an engagement, which lasted nearly half an hour, Captain Elliot was obliged to haul off for want of ammunition, as no preparations had been made for hostilities. The junks, however, had suffered considerably, and made sail and tried to escape. Captain Smith went off in the pinnace to fetch the "Volage," and Captain Elliot again engaged the junks with the cutter and the "Pearl," and beat them back to their former anchorage. Night then began to fall, and Captain Elliot again drew off, and joined Captain Smith, who was entering the bay in the "Volage" for his assistance.

During the night Captain Elliot repented of his rashness, his action having, as he said himself, been difficult of vindication under any less aggravating circumstances; and decided to discontinue hostilities. Captain Smith was apparently prepared to destroy the battery and the junks; but, on Captain Elliot's recommendation, he took the "Volage" back to Hong Kong, and remained there upon the defensive against any attack, that might be organised by the Imperial Commissioner, upon the merchant ships.

On the 5th September Captain Elliot published another notice to reassure the people at Hong Kong as to his intentions. "The men of the English nation," he said, "desire "nothing but peace; but they cannot submit to be poisoned or starved. The Imperial "cruisers they have no wish to molest or impede, but they must not prevent the people "from selling. To deprive men of food is the act only of the unfriendly and the "hostile."

The Imperial Commissioner and the Governor responded to this affair by a proclamation to the merchants and seamen, urging them once more to disregard Captain Elliot's authority, and trade upon the conditions approved by the Chinese Government. "The English foreigner, Elliot," they said, "having in repeated instances withstood and "opposed the laws; having concealed and failed to deliver up a murderer, having "prevented the merchant vessels from entering the port; having ruled and, directed "extensive sales of opium; the charge of crime against him is most clearly established, "as by our reiterated proclamations and clear commands we have already shown."

Enclosure 4 in a letter from Captain Elliot to Lord Palmerston, dated 30th Sept. 1839; pages 11 and 12 of additional papers. (12 pages).

"Now on the 4th September he had the daring presumption to send a number of "vessels of various size to Kowlung (*sic*), and directed them to fire upon and attack the "naval cruisers. Between noon and 8 p.m. they had several encounters, and wounds "were inflicted on the Government soldiery. In this, since he has come forward to "seek a quarrel, we, the Commissioner and the Governor, cannot but command the "assembling of the powerful companies of the army and navy from the several "regiments and squadrons, that they may combine in an attack of extirpation, and "place his life in our hands."

The engagement, however, had the effect of inducing the Chinese to relax the rigour of their preventive measures, and provisions were subsequently supplied, on payment, to the ships at Hong Kong in sufficient quantities, and the notices regarding the poisoning of the water were removed.

Letter from Captain Elliot to Lord Palmerston dated 23rd Sept. 1839; pages 454 and 455 of the correspondence.

On the 7th September a number of the British merchants in China submitted another memorial to Lord Palmerston, complaining of their expulsion from Macao, and of the violence and injustice of the Imperial Commissioner's proceedings in regard to the affray at Hong Kong, and urging again the necessity for the interposition of the British Government, to convince the Chinese that outrages upon British subjects would no longer be tolerated, and to place the trade upon a satisfactory footing.

Enclosure in a letter from Captain Elliot, Lord Palmerston, dated 8th Sept. 1839; pages 452 and 455 of the correspondence.

Letter from Captain Elliot to Lord Palmerston, dated 8th Sept. 1839; pages 450 and 451 of the correspondence.

In a letter to Lord Palmerston, dated 8th September 1839, Captain Elliot complained of the manner in which his attempts to re-establish the British trade had been thwarted by the action of the Americans at Canton; firstly by their submission to the intolerable conditions imposed upon foreign traders by the Imperial Commissioner, and secondly by their denial of any participation by American seamen in the riot in which Lin Weihe was killed. He recommended therefore that a representation should be made to the American Government in regard to their proceedings; and expressed a hope that Her Majesty's Government would take such steps, as might be necessary, to prevent the entrance of cargoes of China produce into the United Kingdom in foreign vessels, until such time as the trade should be placed upon a basis which would permit British merchants to carry on British business.

Captain Elliot was piqued, not unnaturally, with the Americans for not supporting the policy he had thought it necessary to adopt, as he had in the earlier stages of the Imperial Commissioner's proceedings assisted the Consul to the best of his ability. Their submission also on the question of the bonds undoubtedly increased the difficulty of effecting any arrangement with the Chinese Government upon terms different from those which they had agreed to; and their conduct in throwing the whole blame of the Hong Kong riot upon the English, as Lin himself in a subsequent communication said that they had done, was ungenerous and apparently also unjust.

It is, however, most improbable that any compromise, which Captain Elliot could have effected, would have averted war for any length of time; and the British merchants, and also, it may be said, the people of Great Britain profited by the trade which the Americans were able to carry on. The Board of Trade also was of opinion that tea and other produce of China, water-borne at Canton, and received on board a vessel bound for Great Britain at Hong Kong, or any other place on the coast of China, were properly admissible for consumption in Great Britain; and no action was consequently taken to prevent the entrance of cargoes transhipped from American vessels.

Copy of directions to the Commissioners of Customs for the admission of goods from China, brought in foreign vessels from Canton and transhipped into British ships; presented to Parliament on 19th March 1840.

On the evening of the 8th September, the master of a British ship, "The Psyche," at Hong Kong left the harbour in a boat, with a party of 15 men, to reconnoitre a passage in the vicinity, which was said to be occupied by war junks. The boat was caught by an adverse tide, and the party pushed on to Macao. Captain Elliot and Captain Smith, on hearing of the departure of the boat, despatched search-parties under the command of officers of the "Volage," and offered rewards to the natives for news; but such information, as they were able to obtain, led them to suppose that the boat had been cut off, and that the whole party had either been killed, or were prisoners at the Bocca Tigris.

Letter from Captain Elliot to Lord Palmerston, dated 23rd Sept. 1839; pages 454 and 455 of the correspondence.

The proclamation of the Imperial Commissioner and Governor of the 31st August, calling on the natives to arm themselves and prevent the English from landing, which fell into Captain Elliot's hands about the same time, increased his anxiety and irritation; and he accordingly wrote to Captain Smith, requesting him to declare a blockade of the port and river of Canton. At the same time to make it clear that the British Government was in no way countenancing or protecting the contraband traffic, he issued a Memorandum to the commanders of British vessels at Hong Kong and to all Her Majesty's subjects, informing them that the Imperial Commissioner had justified his proceedings by the allegation that some of the British subjects at that anchorage were still trading in opium, and requiring all British vessels engaged in the traffic to immediately leave the harbour and coast.

Enclosure 1 in the above letter; page 455 of the correspondence.

Enclosure 3 in the above letter; page 456 of the correspondence.

Captain Smith fully concurred as to the necessity for the blockade in the interest, as he said, of self-preservation; and gave formal notice of his intention to establish it on the 10th September. Ships actually within the port, or entering it within six days from the date of the notice, were however to be allowed to leave.

Enclosures 4 and 5 in the above letter; page 457 of the correspondence.

The anchorage at Hong Kong was open to attack from several points; and the enforced residence of ladies and children on board ship was doubtless attended with considerable inconvenience. Captain Elliot therefore, on the 12th September, informed the Portuguese Governor of Macao of the intended blockade; and requested him once more to give an asylum to British merchants and their wives and children, and to permit British cargoes of goods specified in the Chinese tariff to be landed at Macao on payment of the usual duties. "In the name," he wrote, "of Her Britannic Majesty's "Government, he takes this occasion once more to request refuge for the British "merchants and their families at Macao; neither can he think that the Chinese autho- "rities would seriously consider the protection of a handful of men, women, and "children to be a breach of that neutrality which your Excellency desires to observe in "the struggle between the British and Chinese Governments, or incur the risks of "serious disputes both with the Courts of Great Britain and Portugal, by acting upon

Letter from Captain Elliot to the Governor of Macao, dated 12th Sept. 1839; pages 8 and 9 of additional papers. (12 pages.)

" pretensions so hostile to both, and so flagrantly insulting to your Excellency's " Government."

Letter from the Governor of Macao to Captain Elliot, dated 14th Sept. 1839; pages 10 and 11 of additional papers. (12 pages.)

The Portuguese Governor replied, somewhat indignantly, that he could not conceive how Captain Elliot had again requested that British subjects should be permitted to return to Macao, in the face of his communication of the 3rd September, and of the fact that they had withdrawn in the first instance of their own accord; and declared that there were abundant reasons for continuing "the same line of conduct, alike " salutary, convenient, and necessary for both Nations." He regretted also that it was not in his power to assent, without permission from the Chinese authorities, to the proposal to land British merchandise in the settlement.

In the meantime, a Spanish brig, "the Bilbaino," which had arrived from Manilla and was lying in the Macao roads, was attacked before daylight on the morning of the 12th September by four war-junks and a number of mandarin boats, and was plundered and afterwards burnt. The captain was on shore, but the mate, a Spaniard, was on board with the crew, which was composed entirely of natives of Manilla. The Manilla men, with one exception, jumped overboard and were afterwards picked up by the Chinese. Six of them were put on shore, and ten were left in the ship's long boat without oars or rudder. Four men, however, were either killed or drowned; and the mate and the one Manilla man, who remained with him, were carried off as prisoners to the Bocca Tigris.

Letter from Mr. Castro to Captain Elliot, dated 13th Sept. 1839; page 6; and letter from Captain Elliot to Lord Palmerston, dated 6th Dec. 1839, and enclosures; pages 45–52 of additional papers. (52 pages.)

The "Bilbaino" was flying the Spanish flag; but was attacked by the Chinese, apparently under the impression that she was the "Virginia," one of the British receiving-ships, from which opium had been delivered to the authorities in accordance with Captain Elliot's notice. This impression had no foundation. The brig, as Captain Elliot reported, had been in the Macao and Manilla trade for three years, and had never belonged to any persons other than subjects of Spain; and apparently had not been at any time engaged in the opium traffic.

Conditions of amicable arrangement forwarded in the name of the Commissioner and Governor; pages 7 and 8; and letter from Captain Elliot to Lord Palmerston, dated 6th Dec. 1839; pages 45 to 47 of additionalpapers (52 pages).

On the 13th September Captain Elliot, before receipt of the reply to his letter from the Portuguese Governor, proceeded with Captain Smith to Macao, and fell in on the way with a British ship, which was conveying the missing reconnoitring party back to Hong Kong. Both officers, on being assured of the safety of the party, were agreed that no further measures of hostility should be taken; and Captain Smith, on their return to Hong Kong, published on the 16th September a notice to the effect that the projected blockade would not be established. The blockade would of course have prevented all foreign trade, and some of the Americans at Canton appear to have protested against it, and to have informed Captain Smith that they would hold the British Government, and him personally, responsible for any lives that might be sacrificed, or losses that might be sustained, by American citizens, in consequence of its institution; but the protest was not referred to by Captain Elliot in his official explanation of the reasons, which had induced him to abandon the project, and there is nothing on record to show that he was in any way influenced by it.

Letter from Captain Elliot to Lord Palmerston, dated 23rd Sept. 1839; pages 454 and 455 of the correspondence.

Speeches made in the House of Commons by Sir J. Graham and Lord Palmerston, on 7th and 9th April 1840. Hansard's Parly. Debates, 3rd Series. Vol. LIII.

Captain Elliot, moreover, hearing that the Imperial Commissioner was alarmed at the protracted continuance of the disagreement, and thinking that the mistake made in regard to the "Bilbaino" might make him more desirous of an understanding, reopened communication with the Chinese authorities at Macao, and made another earnest effort to avert the hostilities that were impending.

Letter from Captain Elliot to Lord Palmerston, dated 16th Nov. 1839; pages 3–5 of additional papers. (52 pages.)

"Elliot," he wrote to the District Magistrate on the 14th "September, has now " arrived at this place in the cruiser of his nation, and desires to open communications " with the honourable officers concerning affairs of importance. For many years " Elliot has transacted business with the high officers of this province with faithfulness; " and what can he desire but peace and goodwill."

Enclosures 2 and 3 in the above letter; page 6 of additional papers. (52 pages.)

The Portuguese Governor and Procurador also appear to have been asked to use their good offices with the local Chinese officers to promote an understanding.

Captain Elliot at the same time offered to assist the consignee of the "Bilbaino" in obtaining the release of the mate and seaman, who were in the hands of the Chinese; but the consignee, who was a Spanish merchant at Macao, was unwilling to avail himself of the offer, partly because he had already appealed to the Portuguese Governor, in whose jurisdiction he considered that the outrage had occurred, and partly because he feared that the interference of the British Superintendent might furnish the Commissioner with a pretext for insisting that the men were British subjects.

Letter from Captain Elliot to Lord Palmerston, dated 6th Dec. 1839; pages 15 17 of additional papers. (52 pages.)

The negotiations opened with the Macao Magistrate were continued for more than five weeks. The Imperial Commissioner and the Governor communicated on the

Enclosures 3 and 4 in the letter from Captain

Elliot to Lord Palmerston, dated 16th Nov. 1839: pages 6-8 of additional papers. (52 pages.)

20th September through the Magistrate three conditions, upon the fulfilment of which they would be prepared to effect some arrangement, as proposed by Captain Elliot, for the resumption of trade, pending the receipt of instructions, which he was expecting, from England :—

1. That all opium in the ships at Hong Kong should be at once surrendered;
2. That the murderer of Lin Weihe should be given up, or that the seamen, who were known to have been engaged in the riot, should be sent to the officers of the Celestial Empire for trial, on the understanding that one only should answer for the crime, and the others should be sent back;
3. That the opium receiving-ships should be removed beyond the Great Ladrone, and that all the persons who had been banished from China, but had not yet complied with the order, should depart immediately.

"If," they said in conclusion, "there be delay, and no answer be returned beyond "the middle decade of this eighth month (the end of September) then shall the "martial valour of the naval and military forces be all led forth, the offence proclaimed, "and its punishment required. Repentance will then be fruitless."

Enclosures 5-7 in the same letter; pages 9-11 of additional papers. (52 pages.

Captain Elliot, on receiving this communication, proceeded at once to Macao, and replied to it from that place on the 24th Sptember.

1. As to opium, he urged that there ought not to be any on board of any English ship at Hong Kong, as he had already taken measures to require the departure from the coast of all English vessels engaged in the traffic; and promised that, if the Chinese wished to search any ship or ships, he would arrange that they should be accompanied by officers of his establishment, and if opium was found, he would not offer any objection to the seizure and confiscation of the cargo of the ship concerned. He agreed further that if it should be proved that any English merchants were secretly deriving a profit from the sale of opium from any English ship, he would not intercede in their behalf, if the whole firm should be expelled from China.

To prevent an illicit trade in opium in the future, he proposed: (*a.*) That no English firm should be permitted to transact business, or to reside in China, unless each member of it should sign a declaration that he would have no concern, direct or indirect, with the opium traffic; that he would not permit any person under his control to be concerned in it, and that he was aware of the existence of a regulation, authorising his expulsion from the country, in the event of his breaking faith; and that all such declarations should be countersigned by him, or by some other officer of the British Nation, and should be submitted by him to the Chinese Government. (*b.*) That no British ship should be permitted to trade with China, unless the commander and consignee should, on the day of its arrival, deliver to Captain Elliot a solemn declaration to the effect that there was no opium on board, and that none would be received during the stay of the ship in China; and unless he should submit this declaration to the officers of the Chinese Government with a certificate, that he believed it to be true.

"If," he said, "the high officers will thus far confide in the good faith of an English "officer, Elliot assures them that this regulation will effect the separation of the "lawful from the lawless trade."

(2.) As to the case of Lin Weihe, he again stated that there were many sailors—American and English—on shore at the time, and that he had been unable to discover the guilty person. He promised, however, that inquiries should be continued, and that the guilty person, if discovered, should be placed on his trial in accordance with the laws of Great Britain, before officers of the Chinese Government. "But now," he added, "let a sure and satisfactory mode of joint investigation be determined upon, "congenial with the customs of the Empire and of his own nation. Thus will all "future matters of the like nature be arranged agreeably to prescribed rule; and "perpetual peace will be preserved."

(3.) Finally, he undertook to arrange that the proscribed individuals then remaining, and the ships that were formerly used for the storage of opium, should leave China as soon as the first northerly wind, which was expected in a few days, should set in. He interceded, however, for two of the sixteen, who, as he said, had not traded in opium, Mr. D. Matheson, then a youth, and Mr. Henry; and suggested that the order of banishment should in their case be rescinded.

He expected, he added in conclusion, to receive instructions from England in about four months; and, until these instructions were received, it would be impossible for the ships to proceed to Whampoa.

Letter from Captain Elliot to Lord Palmerston, dated 16th Nov. 1839: pages 3-5; and

The submission of this reply was followed by discussions with the Chinese officers at Macao in regard to the case of Lin Weihe. Captain Elliot promised to offer a reward of 2,000 dollars for information, which would lead to the discovery of the man

who had caused his death, but declined to countenance any pretext for hushing the matter up. The corpse of a British seaman had been found in Hong Hong Harbour some days before; and on the 27th September the mandarins questioned Captain Elliot about this, and tried in vain to induce him to declare that this was the corpse of the guilty man. This attempt to act on the precedent established by the "London" case having failed, the Chinese were prepared to repeat the infamous procedure adopted on the occasion of the Cumsingmoon affair in 1833; and repeated suggestions were made, during the negotiations, to the effect that the Hong merchants should be permitted to persuade some lascar, or to purchase some Macao slave, to personate the offender. There is nothing to show how far these suggestions were authorised; but from the tenor of Lin's communications, there is reason to believe that the Chinese would have contentedly executed any person whom Captain Elliot might have been pleased to surrender, without any scruples as to whether he was really guilty.

enclosures 8 9 in the letter pages 11 and 12 of additional papers. (52 pages.)

On the 28th September a movement of the Chinese fleet from Chuenpee caused Captain Elliot to return to Hong Kong to look after the shipping, but the negotiations were not interrupted on this account; and on the day of his departure the Imperial Commissioner and Governor announced, direct to him, their orders on his reply to their communication of the 20th September.

Enclosures 10 and 11 in the above letter; pages 12–15 additiona papers. (52 pages.)

1. Captain Elliot was directed to examine the ships at Hong Kong again, as it appeared most improbable that there was no opium on board, and two Chinese had deposed to the purchase of opium from a vessel there at anchor; and Chinese officers would, it was said, be deputed to search the ships after he had completed his examination. If at this search the ships were found to be free from opium, an arrangement would be made to enable them to discharge their cargoes at some place, (other than Macao), appointed for the purpose. The declarations, proposed to prevent illicit trade in the future, were regarded as satisfactory; but it is said, "it will still be "requisite to state clearly, that obedience shall be paid to the new law declared by the "Emperor: if any bring opium, the parties shall be immediately executed, and the "vessel and cargo confiscated to Government."

2. A period of 10 days was allowed to Captain Elliot to discover the murderer of Lin Weihe, and deliver him up for trial and punishment; and measures of extermination were threatened in the event of further delay and evasion. "The brave "forces," it was said, "naval and military, that are now everywhere stationed, are "assembled as clouds upon the various waters. There must be no more glossing "pretexts for delay, drawing down measures of extermination."

3. The proscribed persons then remaining were allowed six days to return to Macao and settle their affairs; and they, and also the receiving-ships, were then to leave China at once, as the northerly wind had set in.

4. All "Chinese traitors," other than the compradores and working-men engaged through the Hong merchants, who were then in concealment in the vessels at Hong Kong, were to be made over to the officers of Government.

"The Celestial Empire," they concluded, "is a great one, cherishing as its children "the small. All outer foreigners, who come to China to trade, and pay implicit "obedience to the laws, look up to invite the Imperial grace to show tenderness "towards men from afar. It is not allowable carelessly to bring forward such "expressions as 'mutual harmony,' and insert them in addresses, to the infraction of "the requirements of dignity, whereby severe commands are called forth."

Captain Elliot replied, on the 5th October, that the ships at Hong Kong might be searched at once; that orders from England regarding the words required in the bonds might be expected in four months; that of the sixteen proscribed British subjects, six had gone and four others were on the point of departure; that of the English receiving-ships, eight only remained, of which one had been sold to the Americans, and three were to be broken up; that he had not been able to discover the murderer of Lin Weihe, but would continue to make strict inquiry, and that he knew nothing about the Chinese said to be concealed on the British ships, and thought it probable that they had all absconded. "The English nation," he said, "is the equal of any "other on the face of the earth in justice and power; and in using expressions suitable "to her station, there is no desire to offend the dignity of this Empire. Elliot "requests that the language of the high officers towards him, the officer of his nation, "may no longer be contumelious."

Enclosure 12 in the above letter; page 16 of additional papers. (52 pages.)

Other correspondence followed with the Macao District Magistrate, principally regarding the departure of the proscribed individuals and the receiving-ships; and on the 8th October the Imperial Commissioner and Governor, in consideration, as they

Enclosures 13–17 in the above letter; pages 16–22 of additional papers. (52 pages.)

said, of the delay from which British ships had already suffered, sanctioned a modification of their original orders in regard to the execution of bonds.

1. Ships, of which the commanders were prepared to execute bonds in the prescribed form, were to be allowed to trade as usual; and all other ships were to be searched at a place outside the Bocca Tigris, the cargo being removed into lighters for the purpose. If any opium were found in a ship, the offender was to be executed and the ship and cargo confiscated; but if no opium were discovered, the ship would be allowed to trade. Three days were allowed for the departure of all vessels neither giving bonds, nor submitting to search, and after that time fire-ships would, it was said, be sent to destroy them. "As to vessels with cargoes hereafter arriving," they said, "they will all, without reference to their having, or not, executed the obligations, (or) "to their having or not been searched, be required always, each time that they come "to Canton, to execute an obligation in the same form. If they will not execute an "obligation, or do not execute it according to the prescribed form, they shall, upon "no terms whatever, be admitted to trade."

2. A further period of ten days was allowed for the surrender of the murderer of Lin Weihe; and after the expiration of this period they threatened that they would waste no more words upon the Superintendent, but would send ships to take the master, merchant, mates, and seamen of the vessel concerned, and would then select from them the principal offender to atone for his crime, and send the others back.

3. The remaining receiving-ships and proscribed persons were to leave without further delay. Mr. Henry, however, was permitted to remain under surveillance, as Captain Elliot said he had never dealt in opium. Mr. D. Matheson was required to depart as being a member of Mr. Jardine's firm. "In conclusion," they said, "the "commands which we, the Commissioner and the Governor, have at various times "given, have been no otherwise than in pursuance of the principles of justice, or for "the complete exhibition of needed instruction and monition. Where has been the "contumelious language? As to what may be the power of that nation in comparison "with other nations, the Celestial Empire cares not to inquire over much. Let not "any thoughtless bragging representations be confusedly made."

Enclosure 18 in the above letter; page 23 of additional papers. (52 pages.)

On receiving these orders, Captain Elliot rather hastily came to the conclusion that the Commissioner and Governor intended to drop the question of the surrender of a British subject for execution, and informed them, in reply, that it would be easy for him to arrange everything in accordance with their wishes, and that he would proceed again to Macao on the 15th October for the purpose. "Concerning," he wrote, "the "apprehension of the murderer of Lin Weihe, he can only repeat that he will continue "to use all diligence, and report to their Excellencies, as soon as he is discovered, to "the end that he may be placed on his trial." He proceeded accordingly to Macao, and after some days of discussion effected an arrangement, on the 20th October, with the Hong merchants, which provided that the British trade should be carried on outside the Bocca Tigris at an anchorage near Chuenpee, without execution of the required bonds, on condition that the ships and cargoes should be subject to examination, that the cargoes should be transported to and from Canton in Chinese boats, and that port dues, pilots' charges, and linguists' fees should be paid in the usual manner.

Public Notice to British subjects, dated 20th Oct. 1839; pages 5 and 6 of additional correspondence (14 pages); and enclosures 19 and 20 in the letter from Captain Elliot to Lord Palmerston, dated 16th Nov. 1839; pages 23 of additional papers. (52 pages.)

Captain Elliot appears to have been perfectly satisfied as to the authority of the Hong merchants to conclude an arrangement of this kind, and on the 21st October he wrote as follows to Lord Palmerston:—"In my despatch of the 23rd ultimo, I "expressed the hope, that it would soon be in my power to put an end to the state of "great danger and difficulty then existing; and I have now to report its realisation in "an adjustment; temporary, indeed, but honourable. The British community is "returning to Macao; the ships will proceed immediately to discharge their cargoes, "and, in all respects, there is a restoration of the usual tranquillity; neither has there "been any departure, as your Lordship will hardly need to be told, from the principles "that it was impossible for me to deliver up a man in compensation for the native "Lin Weihe, or to accede to signing of a bond of consent to the trial and capital "punishment of the Queen's subjects by Chinese forms of proceeding."

Letter from Captain Elliot to Lord Palmerston, dated 21st Oct. 1839; page 1 of additional correspondence. (14 pages.)

British subjects were informed of the arrangement arrived at, and a committee of British merchants, deputed from Hong Kong for the purpose, met the Hong merchants at Macao, and discussed and settled with them the details of the scheme.

Minute by the Committee of British merchants, dated 22nd Oct. 1839; pages 7 and 8 of additional correspondence. (14 pages.)

The arrangement was at the best a makeshift; and difficulties would probably have arisen in regard to the examination of cargoes and ships by the officers of the Chinese Government. It seems also somewhat doubtful whether it would have

been accepted entirely by the Imperial Commissioner and Governor. Any prospect, however, that it might have had of success was effectually marred by the selfish and unpatriotic conduct of Captain Warner and Mr. Daniell, who had been one of the supracargoes of the East India Company, and was then a private merchant in China. Captain Warner arrived from Singapore in a ship, the "Thomas Coutts," consigned to Mr. Daniell, during the progress of Captain Elliot's negotiations; and although he was aware that the negotiations had reached an advanced stage, he applied for a pilot and proceeded to the Bocca Tigris, and there signed a bond in the form required by the Imperial Commissioner, and the ship was at once taken to Whampoa.

Letter from Captain Elliot to Lord Palmerston dated 5th Nov. 1839; pages 8-11 of additional correspondence. (14 pages.)

On the 22nd October Captain Elliot informed the Chinese Magistrate of Macao of the conclusion of the arrangement with the Hong merchants; and requested that orders might be issued, authorising pilots to take the merchant ships up the river for examination, and that no opposition might be offered to the return to the settlement of the British merchants and their families, several of whom had been emboldened by the favourable aspect of the negotiations to make their way back.

Enclosures 20-2 in the letter from Captain Elliot to Lord Palmerston, dated 16th Nov. 1839; pages 23-25 of additional papers. (52 pages.)

The Magistrate replied that the merchants and their families must wait until orders could be obtained from the Commissioner and Governor; but no action was taken to expel those who had returned.

Captain Elliot then requested that the servants might be restored and supplies furnished, and that communication with Canton might be permitted in the usual manner; and the Magistrate promised to apply for sanction to this request, if the Superintendent would arrange to send the merchant ships at once to the place appointed for their examination, and would comply with the other orders which had been issued.

On the 25th October, however, the Imperial Commissioner passed orders to the effect that at least two hundred days would be occupied in the search of the ships, and that until it was completed the English could not be allowed to return to Macao, and that their supplies must be strictly cut off, and any, who had returned, expelled. If, however, he said, bonds were given in the prescribed form, everything without exception might be permitted to go on as usual.

Enclosure 26 in the above letter pages 29-31 of additional papers. (52 pages.)

These orders were communicated on the 26th October by the Macao Magistrate and an officer specially deputed by the Commissioner; and on the same day these officers announced in another communication further orders by the Imperial Commissioner and Governor in regard to the proposed arrangement for carrying on the trade outside the Bocca Tigris. "When I, the Commissioner," said Lin, "on the 20th "September, first issued my commands, I set down in order these three things, in the "prior place, the surrender of opium, the delivering up of the murderer, and the "sending home of the empty store-ships and the depraved foreigners.

Enclosure 24 in the above letter; pages 25-28 of additional papers. (52 pages).

"In all such parts of my commands as related to the entrance of the vessels, I stated "that if they should act obediently in each of the three preceding particulars, it would "then not be difficult to resolve on the granting of favours. Let me ask now, if at "this moment these three particulars have indeed been duly arranged? And though, "it may be said, that there is no opium to be surrendered, and that the depraved "foreigners and the empty store-ships are being sent home, how is it that the principal "murderer in a most important case of homicide has been set aside, as not to be "inquired about? If indeed the said foreigners were to give the bonds in accordance "with the prescribed form, it might yet be suffered, that time should be allowed to "arrange that matter; but now, while it is far otherwise, how shall the granting of "permits be at once sanctioned?

"Moreover, in my commands of the *9th October, and proclamation of the same date, "it was declared that this was a modification beyond the bounds of rule, granted upon "the present occasion, in consideration for the protracted delay which all the vessels "had suffered; that vessels hereafter arriving would all be required to execute an "obligation in accordance with the form prescribed; that, if not according to the "form, they should upon no terms whatever be admitted to trade. But from what "the foreign merchants now declare, it seems that hereafter also they will be equally "unwilling to execute the obligation; that their idea is to continue selling opium. "To what end, then, will the searching the cargoes upon the present occasion tend? "Regarding the crowding back to Macao of the foreign merchants and their families, "how can any encroaching be allowed, or indulgence be shown while these matters "are yet in confusion? I require you immediately, in concert with the Commodore of "the Heang-shan Station, and my deputed officer, to act faithfully in driving them "forth, and to urge the Portuguese foreigners to join also in pushing them out of "Macao; their stay must not be suffered. The cargo-ships, which do not give the

* *i.e.*, 8th October.

" bonds on this occasion, must yet, in accordance with my former commands, be " interrogated whether or not they will give the bond according to the prescribed " form upon the next occasion; and they must be required, severally, to give " certificates. Such as will express their willingness to give the bond may, on the " present occasion, be allowed to await search. If they are unwilling, on any after " occasion, to give the bond, it would be better they should on this occasion return " home, and they shall be required within three days to take their departure. . . . .

" Regarding the murderer in the case of homicide, Elliot must still, as in my former " reply, be required to send up for trial the five men detained by him. If he continue " to oppose and delay, I must call upon the Naval Commander-in-Chief to proceed at " the head of his war vessels and fire-ships, as also of the land soldiery encamped at " all the various points of ingress, that they may join in seizing the murderous " foreigner, making it imperative on them to bring him up for trial and punishment; " and at the same time to search for and apprehend all the traitorous Chinese in " shelter and concealment on board the various ships. And when they are brought " to submission, it will then be time to consider of regulations for their search and " admission into the port.

" I, the Commissioner, am sworn on behalf of the Celestial Empire to remove " utterly this root of misery; nor will I let the foreign vessels have any offshoot left " for the evil to bud forth again."

The Governor also in his orders insisted on the necessity for the execution of bonds, as a guarantee of good faith, and on the difficulties which would attend any scheme for the examination and removal of cargoes outside the port.

" As soon as this communication reaches the said Superintendent," wrote the District Magistrate and Commissioner's Deputy, " when announcing these orders, " let him immediately pay obedience in the matter of their Excellencies' replies, and " speedily deliver up at once the murderous foreigner; let him also send home all " the depraved foreigners and opium store-ships. If the cargo-ships will give the " required form of bond in the same manner as Warner's ship has done, they shall " then be permitted to proceed to Whampoa. Such as are unwilling to give the " bond and proceed to Whampoa, are required within three days to start off home. " All the foreigners and foreign women are instantly to leave" (Macao).

Enclosure 25 in the above letter; page 28 of additional papers. (52 pages.)

To this communication Captain Elliot again replied that he was not aware who had caused the death of Lin Weihe, and that the five men * who had been found guilty of rioting had been sent home to receive their punishment of imprisonment and fine: and asked for time to translate their Excellencies' orders, as they were of great importance.

Enclosures 27-29 in the above letter; pages 31-37 of additional papers. (52 pages.)

This reply provoked a retort that whatever was contained in their Excellencies' commands was always of importance, and further orders followed fast; the Macao Magistrate and Commissioner's Deputy communicating commands from the Commissioner on the 27th October, and the Commissioner and Governor announcing further orders direct to the Superintendent upon the same day.

The tenor of the Commissioner's orders to his Deputy and the Macao Magistrate will appear from the following passage:—" That the English foreigners," he said, " should not be allowed hastily to return to Macao. I have in repeated instances " declared, and commanded, and urged their speedy expulsion. How can you still " prefer a request for their return, stating that all these foreigners say that all things " are now arranged agreeably to my commands? Let it be asked, are the bonds " given? Is the murderer delivered up? Of other matters I say nothing. I require " that they be speedily, and with severity, driven out. Suffer no longer delay or " addition to their numbers, that you bring not investigation on yourselves also."

In their orders issued direct to Captain Elliot, the Commissioner and Governor explained at some length the objections, (which were undoubtedly serious), to the scheme for unloading and searching vessels outside the Bocca Tigris. In the first place, as they said, there were not enough Chinese boats in the river for the purpose. Secondly, the operation would be tedious and difficult, and goods would be certain to suffer. And thirdly, the ships would not be able to spare men enough to look after their property, when on its way in Chinese boats from the Bocca Tigris to Canton. " We, the Commissioner and Governor," they continued, " loving and compassionating " all the foreigners, and being unwilling that they should suffer this loss, therefore " resolved to arrange for them a mode of operation, by which such as would execute

* The men were released on their arrival in England, in accordance with an opinion, expressed by the Law Officers of the Crown to the effect that it was doubtful whether Captain Elliot had the power to sentence them to imprisonment in England. Hansard's Parliamentary Debates. 3rd Series, Vol. 53, page 1,133.

" the bond in the form prescribed should be allowed to escape the search, thus " leading them in a path, short and convenient, and showing them the full weight of " faithfulness and justice. Such a disposition would we extend, indeed, to all the " foreigners; but these foreigners still will not understand, and are willing to " undergo the trouble of being searched. And when we examine what are their " stupid and obscure thoughts, we find only that they regard as ill-looking the " words 'the parties immediately executed.' They will not consider that when " 'execution' is spoken of, it is in sole reference to those persons who bring opium. " If they, indeed, bring none, what obstruction or difficulty can there be to the execu- " tion of the bond? Thus Daniell, having executed the bond and sent his ship to " Whampoa, he was immediately at liberty to trade." . . . . . "The other " day, the said Superintendent joined to himself several foreign merchants, to repair to " Macao and deliberate. This would seem as though these men were such as had an " acquaintance with affairs, and that this was the cause of consulting them. But I " have heard that they had the daring presumption to carry forcibly their opinions, " that they were foremost in contumacy and opposition, and that they employed " coercion to prevent the smaller merchants giving the bond. How exceedingly " hateful is such perverse and obstinate exercise of compulsion! There can be no " doubt, from this, that they are depraved individuals engaged in the sale of opium. " We, the Commissioner and the Governor, before did indeed determine to give a " modified arrangement; but now, since we have become aware of these circumstances, " we assuredly cannot bear with their contumacy and trifling. Those foreign " merchants, who went to Macao, to lord it in the deliberations, being unwilling to " give the bond, all of them must be refused permission to trade, and be compelled " to take their departure to return to their countries."

Four foreign vessels, they said, had recently visited Kwanghai, contrary to the regulations; and in an affray, which had occurred, one Chinese had been killed, and three wounded, and the pig-tails of seven others had been cut of; and then, on the appearance of the war junks, the foreign vessels had escaped and returned to Hong Kong. Three foreigners also had been seized for selling opium off Hainan, and had admitted upon examination, that the Captain of the "Hercules," a British ship, was engaged in an extensive traffic in the drug. Captain Elliot, therefore, was ordered to ascertain and report the names of the foreigners, who had killed and wounded the Chinese at Kwanghai, to enable them to inflict punishment, and also to surrender the Captain of the "Hercules" for examination and trial.

" For the rest," they concluded, " the traitorous Chinese on board the foreign " vessels, we find more numerous the more we inquire. Before we commanded that " they should be given up, and the said Superintendent gave it no thought. It seems, " for the most part, that these foreigners cannot be aroused or influenced by good " words. And we, the Commissioner and the Governor, have no course left but to " send out war vessels to proceed to Hong Kong, to surround and apprehend all the " offenders, those connected with murders, and those connected with opium, as well as " the traitorous Chinese, concealed on board the foreign vessels. We take occasion " distinctly to make this known to enable you to be prepared. We, the Commissioner " and the Governor, conduct affairs open to the broadest light of equity, and are not " willing to come on any unexpectedly."

Letter from Captain Elliot to Captain Smith, dated 27th Oct. 1839; pages 11 and 12 of additional correspondence. (14 pages.)

This was practically a declaration of war; and on the 27th October Captain Elliot wrote to Captain Smith, who was then off Macao in the "Volage," calling his earnest attention to the menacing character of the communications, which he had received from the authorities, repudiating the arrangement effected in regard to the trade; informing him that he had received credible information to the effect that the Chinese Admiral had assembled a considerable force at the Bocca Tigris, and was contemplating measures of hostility against the merchant ships with the ostensible object of seizing the murderer of Lin Weihe; and suggesting that Her Majesty's ships should be moved to the anchorage below Chuenpee, and that Captain Smith should submit in his own name "a moderate but firm address" to the Imperial Commissioner and Governor, as the only possible means of averting some "sudden disaster." "Upon the " other hand," he added, "this measure will enable you to judge of the actual extent " of preparation, and of the readiness to attack; and if it be intended, as I am " strongly disposed to believe, Her Majesty's ships can be in no more suitable or " imposing situation for effectually repelling such aggressive purposes, than in the " sight of the batteries, and under the immediate observation of the Commissioner."

Letter from Captain Smith to Captain Elliot, dated 28th Oct. 1839; page 12 of additional correspondence. (14 pages.)

Captain Smith replied, on the 28th October, that he had observed, with considerable uneasiness, the erection of batteries and the increase of the Chinese force in the vicinity of Hong Kong, and the military preparations at Macao, and was of opinion that a firm and decided stand should be made against any further encroachments. He concurred as to the advisability of submitting propositions direct to the Imperial Commissioner at the Bocca Tigris, and expressed himself ready to proceed to Chuenpee for the purpose. Captain Elliot accordingly joined him; and the "Volage" and H.M.S. "Hyacinth," which had also arrived in China, started for Chuenpee, where they arrived on the 2nd November.

Address from Captain Elliot to the Imperial Commissioner and Governor of Canton, dated 29th Oct. 1839; page 37 of additional papers. (52 pages.)

Before leaving Macao, Captain Elliot replied briefly, on the 29th October, to the communication from the Commissioner and Governor of the 27th October. "Elliot," he wrote, "has received the communication of their Excellencies, dated on the 27th "instant, containing the statements of outrages committed upon the coast, which "have filled him with sorrow and shame. He, again and again, declares that the British "Government will give no protection to the men of his nation pursuing these guilty "and sordid practices. But concerning these spoken of Elliot knows nothing. They "have not taken place within the circle of his authority; and he can solemnly aver "that he has used his best efforts to prevent them, wherever his power extends. It "is utterly false to say that he has given these, or any other shameful deeds, his "countenance. Concerning all other matters touched on in their Excellencies' "communications, Elliot has already replied fully."

Letter from Captain Elliot to Lord Palmerston, dated 5th Nov. 1839; pages 8-10; and Enclosure 3 in the letter; page 13 of additional correspondence. (14 pages.)

At Chuenpee the British ships were anchored about a mile below the first battery, where an imposing force of Chinese war junks and fire-ships was assembled, and a Lieutenant and Mr. Morrison, the Chinese Secretary, were sent on the 2nd November to the Admiral's junk, with an address from Captain Smith to the Imperial Commissioner and Governor, submitting for their consideration the following propositions:—

First.—That they should forthwith publish a proclamation, withdrawing the orders issued for the destruction of the British merchant ships by war junks and fire-ships in three days, because the commanders had not signed bonds, which they could not execute "consistently with the laws of their own country."

Second.—That the British merchants and their families should be allowed to reside on shore without fear of seizure, and should be furnished with servants and supplies, until the commands of the Queen of England should be "received for "the adjustment of all difficulties, agreeably to the principles of peace and "reason."

The Lieutenant and Mr. Morrison were civilly received; and the Admiral promised to forward the address to the Commissioner and Governor, who were then in the neighbourhood, and to send an answer the following day. He also expressed a wish that the ships should move a little further down the river; and this Captain Smith immediately did.

In the evening a linguist was sent to the British ships with a verbal message, requesting that Mr. Morrison might be sent to the Admiral's junk; but a reply was given to the effect that Captain Smith's address contained all that was to be said, and until it was answered, Mr. Morrison could not be allowed to attend.

In the forenoon of the 3rd November a Chinese junk, with an officer on board, anchored at a short distance from the British ships, and the linguist was again deputed to request that Mr. Morrison might be sent. The request, however, was again refused; and about the same time the Chinese squadron, consisting of 29 junks, stood out towards the British ships, which immediately got under weigh and advanced to meet them.

Captain Smith to the various Commanders of war junks, dated 3rd Nov. 1839; page 13 of additional correspondence. (14 pages.)

The Chinese, on seeing this, anchored in good order; and Captain Smith sent by the linguist a brief communication addressed to the Commanders, requiring them to withdraw to their former anchorage. "Smith," he said, "commanding the British "naval force, hereby sends information to the various Commanders. He has per-"emptorily to request, that all their vessels instantly return to the anchorage north of "Shakok. It will be well so to do."

Reply by the Chinese Admiral to the above communication, dated 3rd Nov. 1839; page 13 of additional correspondence. (14 pages.)

This communication was delivered to the Admiral, who was commanding in person; and in a short time he sent back by the linguist the following reply: "The linguist "having returned on board, all that he had to represent for you has become known to "me. At this moment, all that I, the Tetuh (Admiral), want is the murderous "foreigner, who killed Lin Weihe, a single individual. If Elliot will name a period

" in which he will deliver up the murderer, I, the Tetuh, will be in no way appre-
" hensive in my requirements. As soon as a time is given in which the murderer
" shall be delivered up, the force can be immediately drawn back to the Bogue.
" Otherwise by no means whatever will I accede. This in reply."

The linguist also brought back Captain Smith's address to the Commissioner and Governor, and a sealed order addressed to the Commander of the ship on board of which the five prisoners, sentenced to imprisonment for participation in the fatal affray, had been confined.

The Admiral's reply showed plainly that the Imperial Commissioner was determined upon hostilities, unless some individual should be surrendered for execution, in atonement for the death of Lin Weihe; but Captain Elliot addressed to him the following final communication:—"Elliot again and again solemnly repeats that he knows not
" the murderer of the native Lin Weihe; that he should have been punished, if he
" had been discovered; and that he shall be punished, if he be apprehended. Elliot
" is a sincere lover of peace, and is not responsible for the consequences of present
" proceedings."

Letter from Captain Elliot to the Chinese Admiral, dated 3rd Nov. 1839; page 14 of additional correspondence. (14 pages.)

Captain Smith was not disposed to retire in the presence of a force which (in Captain Elliot's words) had been "moved out with the palpable intention to intimidate;" and thought that the Chinese should not be left at liberty to slip by the ships of war in the night and attack the merchantmen at Hong Kong. He accordingly, with Captain Elliot's concurrence, gave the signal for attack and the British ships opened fire. The engagement, which followed, was of short duration. In less than three quarters of an hour, four of the Chinese junks had been destroyed, or sunk, and several were waterlogged; and the Admiral, who had personally displayed much bravery and spirit, retired with the remainder of the squadron to his former anchorage. The damage done to the British ships was slight. Captain Smith did not oppose the Admiral's retreat; and made sail for Macao to cover the embarkation of British subjects and to make provision for the safety of the merchant ships. The moderation displayed was, however, thrown away upon the Chinese; who, as Sir John Davis tells us, misconstrued Captain Smith's motives for not entirely destroying the squadron, and claimed that they had gained a victory upon the occasion.

Letter from Captain Elliot to Lord Palmerston, dated 5th Nov. 1839; pages 8-10 of additional correspondence. (14 pages.)

Sir John Davis' "China."

Arrangements were made for the embarkation of British subjects wishing to leave Macao on the evening of the 3rd November; and Captain Elliot then proceeded with Captain Smith in the "Volage" to Hong Kong, leaving the "Hyacinth" at the Portuguese settlement.

At Hong Kong, the Chinese brought some troops and guns to the neighbourhood of the anchorage and opened fire on the ships; and although the fire was ineffectual, and the troops might easily have been dislodged, Captain Elliot and Captain Smith were both anxious to avoid any further measures of hostility. To safeguard the ships, however, from any possibility of surprise, Captain Elliot insisted on their removal, much against the wish of the Commanders and underwriters, from Hong Kong, to a safer anchorage at Tongkoo Bay. No trade was permitted after the affair at Chuenpee, and the transhipment of cargoes from American vessels was prohibited by the Chinese.

Letter from Captain Elliot to Lord Palmerston, dated 7th Nov. 1839 and Enclosures; pages 39-42 of additional papers. (52 pages.)

Sir John Davis' "China."

The Imperial Commissioner and the Chinese authorities, as might have been expected, absolutely refused to admit the mistake, which had been made in regard to the "Bilbaino." The appeal of the consignee for redress was met with a flat denial of the truth of his allegations, and with an injunction to the Portuguese to seize him, and forward him to the Commissioner for exemplary punishment. The Spanish mate and Manilla seaman were taken from the Bocca Tigris to Canton with chains round their necks, and the mate was there induced by threats and promises to sign a false declaration to the effect that the vessel, though she was Spanish at the time of her destruction, had belonged to the British and had been sold by them to the Spaniards.

Letters from Captain Elliot to Lord Palmerston, dated 16th Nov. and 6th Dec. 1839; pages 3-5 and 45-47 of additional papers. (52 pages.)

In a letter to Lord Palmerston, dated 16th November 1839, Captain Elliot made a defence of his conduct in regard to the case of Lin Weihe and the opium traffic.

"I have proceeded," he wrote, "to the uttermost verge of my authority, if I have
" not exceeded it, in the attempt to discover and bring to justice the murderer of this
" innocent native, and in my deep public and private anxiety and distress, that con-
" sciousness is a support to me. The Commissioner's accusations to the contrary
" occasion me no uneasiness, and I am, in like manner, unaffected by his charge of
" countenancing the illicit traffic in opium.

"If my private feelings were of the least consequence upon questions of a public
" and important nature, assuredly I might justly say that no man entertains a deeper

Letter from Captain Elliot to Lord Palmerston, dated 16th Nov. 1839; pages 3-5 of additional papers. (52 pages.)

" detestation of the disgrace and sin of this forced traffic on the coast of China than " the humble individual who signs this despatch.

" I see little to choose between it and piracy; and in my place, as a public officer, " I have steadily discountenanced it by all the lawful means in my power, and at the " total sacrifice of my private comfort in the society in which I have lived for some " years past.

" But whilst I have endeavoured to fulfil my duty to Her Majesty's Government in " the public course of repression I have pursued, it did not consist with my station " to sanction measures of general and undistinguishing violence against Her Majesty's " officers and subjects; and to a mode of working out objects, right or wrong, which " set all the obligations of moderation and justice at defiance."

The despatches submitted by Captain Elliot, reporting the circumstances under which the opium was surrendered, and the British merchants withdrew from Canton to Macao, reached England on or before the 21st September 1839; and several demands for settlement of claims on account of the opium were made upon the Treasury at the end of October and beginning of November.

Communications between the Board of Treasury and the holders of Bills or certificates granted by the Chief Superintendent at Canton for opium surrendered: presented to Parliament on the 23rd March 1840.

Correspondence between Her Majesty's Government and the East India Company regarding the expedition for service in China; submitted to Parliament on 15th April 1840.

Hansard's Parliamentary Debates; 3 Series, Vol. LIII. From 24th March to 11th May 1840, pages 6–11.

Page 920 of the above volume of Hansard.

Her Majesty's Ministers were not at first disposed to accept the responsibility thrust upon them by Captain Elliot in regard to the opium; and on the 11th November 1839, the claimants were informed that no funds were available for the payment of compensation, and that the Government had no intention of submitting to Parliament a vote for the payment of any such claims. A demonstration, however, was decided on; and orders were issued, on the 4th November 1839, for the despatch of a naval expedition to the China Seas; and, on the 3rd April 1840, when the Government was in possession of the accounts of the proceedings, which followed the withdrawal of the English from Canton up to the time of the naval engagement at Chuenpee and the removal of the merchant ships to Tongkoo Bay, an Order in Council was issued authorising the Commanders of Her Majesty's ships of war to seize and detain Chinese vessels and cargoes, so as to compel the Chinese Government to grant satisfaction and reparation for the proceedings of its officers at Canton.

Some of the merchants also, whose opium had been surrendered, petitioned Parliament; and on the 24th March 1840, Mr. Crawford brought forward a motion in the House of Commons for the appointment of a Select Committee of the House to inquire into the subject of their grievances. Her Majesty's Ministers had at this time, (as stated by Lord John Russell), decided to include, in their demands upon the Chinese Government, an "indemnity for the loss of the property" of British subjects "incurred by threats of violence," and the motion was not opposed. On the 3rd April, a Committee was nominated, which comprised among its members Lord Palmerston, Sir Robert Peel, and Mr. Gladstone; and on the 1st May, the correspondence relating to China, which had been presented to Parliament, and the Reports of Committees of the House upon the China Trade, and upon the affairs of the East India Company in 1830–32, were referred to it for consideration.

Report from the Select Committee of the House of Commons on the China Trade, dated 5th June 1840, with Minutes of Evidence.

The Committee examined a certain number of witnesses, (among whom were Mr. Robert Inglis and Mr. Jardine), but little additional information of value was elicited, and no conclusion was arrived at; the Report, which was submitted on the 5th June, 1840, being to the following effect:—" That your Committee feel that they shall best " discharge their duty by laying before the House, without any observation on their " own part, the evidence which they have taken upon the subject."

The opium trade, Captain Elliot's proceedings, the paucity of the instructions issued to the Superintendents by Her Majesty's Government, and the lawless conduct of some of the British residents in China, offered ample opportunities for hostile criticism; and the war was unpopular with many people in Great Britain.

Hansard's Parliamentary Debates; 3 Series, Vol. LIII.

An attack upon the Government in the House of Commons was led by Sir J. Graham, who moved, on the 7th April 1840, the following Resolution:—" It appears to " this House, on consideration of the papers relating to China, presented to this " House by command of Her Majesty, that the interruption in our commercial and " friendly intercourse with that country, and the hostilities which have since taken " place, are mainly to be attributed to the want of foresight on the part of Her " Majesty's present advisers in respect to our relations with China, and especially to " their neglect to furnish the Superintendent at Canton with powers and instructions " calculated to provide against the growing evils connected with the contraband traffic " in opium, and adapted to the novel and difficult situation in which the Superintendent " was placed."

A long debate ensued. Mr. Gladstone, Sir Robert Peel, and several others spoke in support of the Resolution, and vigorously assailed the Government, which was eloquently defended by Mr. (afterwards Lord) Macaulay, then Secretary for War, Sir J. Hobhouse, President of the Board of Control, and Lord Palmerston. Mr. Charles Buller also made an effective speech in defence of the Government, and several other members spoke on both sides. Sir J. Graham's motion, as Sir R. Peel said, did not pronounce any opinion as to "the opium trade, nor as to the policy and justice " of the war;" but it offered an opportunity for an attack upon either or both, and the opium trade was strongly denounced by Mr. Gladstone and Viscount Sandon, and also by Sir George Staunton and others, who supported the Government. The necessity for war, or at least for a demonstration of force, was however generally recognised. Even Mr. Gladstone, who said that the war was more unjust in its origin and more calculated in its progress to cover the country with permanent disgrace than any he had ever read of, admitted that the despatch of an armament was required. The country, as he said, had been placed by the Ministers in such a position that it was a matter of certainty that terms of equity could not be demanded without a display of force. Sir Robert Peel also stated clearly, that he was not prepared to deny the necessity for a hostile demonstration. The attack, in short, was made more upon the real or supposed mistakes of the Government in the past than upon the measures which they contemplated in the future.

Captain Elliot's conduct met with more approval than condemnation. Mr. Gladstone, though he censured some of his proceedings, said, "that in the discharge of " his duty he had throughout shown great courage, and in some part of it great tact " and discretion;" and the other members who spoke in support of the Resolution, as Lord Palmerston observed, were, with few exceptions, more inclined to approve than to criticise. Lord Palmerston himself said that Captain Elliot had made a signal exhibition of "zeal, courage, and patience."

The division on the Resolution, which took place on the 10th April, resulted in a majority of nine in favour of the Government.

In the course of his speech, in this debate, Lord Palmerston stated frankly, that he did not believe, that the motive of the Chinese Government, in prohibiting the importation of opium, was "the promotion of the growth of moral habits." "The fact " was," he said, "that this was an exportation of bullion question, an agricultural " interest protection question. It was the poppy interest in China, and the practical " economists, who wished to prevent the exportation of the precious metals, that led " the Chinese Government to seek to put down this contraband trade in opium."

Mr Gladstone also, (it is important to observe), remarked that there was a "broad " and marked distinction" between the opium trade "as carried on before September " 1836, and as carried on subsequent to that period." "A Report," he said, "of the " Committee of the House of Commons had referred to the former period, and he " could imagine that in the lax state of morals, which there prevailed both in this " country, and in China, with respect to the smuggling of opium, that that Committee " should have been unwilling to enter on the subject of the suppression of the opium " trade, when it was supposed that the Chinese themselves were not in earnest in their " desire to put it down. The quantity of opium raised and exported to China was, " however, at that time much less than it had subsequently been. The trade had not " then taken the enormous spring which it had since done; and besides, there was at " that time a power in the supracargoes enabling them to put a stop to the opium " trade whenever they might see necessary to adopt such a course, and that power it " was the intention of Parliament to continue by the Act of 1833."

In the House of Lords the debate which took place turned more directly upon the opium trade, Earl Stanhope, on the 12th May 1840, moved the following Resolution, denouncing the trade and deprecating the war: "That an humble address be " presented to Her Majesty to express to Her Majesty the deep concern of this House " in learning that an interruption has occurred in the friendly relations and commercial " intercourse which have so long subsisted with the Chinese Empire: and to represent " to Her Majesty that these calamities have, in the opinion of this House, been " occasioned by British subjects having persevered in taking opium to China, in direct " and known violation of the laws of that Empire; and to require that Her Majesty " will be graciously pleased to take immediate measures for the prevention of such " proceedings, which are so dishonourable to the character and so detrimental to the " interests of her subjects: and to assure Her Majesty that if any additional powers " should be found requisite for the purpose, this House will readily concur in granting " them to Her Majesty."

Hansard's Parliamentary Debates: 3 Series Vol. LIV. From 12th May to 22nd June 18

Hansard's Parliamentary Debates: 3 Series Vol. LIII., pages 1158 and 1159.

In his speech, Earl Stanhope, who had admittedly presided at a public meeting at which it was resolved to send certain strongly-worded resolutions to the Emperor of China through Commissioner Lin, vindicated the sincerity of the Chinese Government in regard to the prohibition of opium, urged that British subjects were bound to respect that prohibition whatever might be its motive, and made what Lord Melbourne described as "a most severe, bitter, and in many respects "unjustifiable attack upon Captain Elliot," whom he apparently regarded as a friend of the opium traders. His protection of Mr. Dent, his appeal to the Portuguese Governor of Macao, the affair at Kow Lune, the proposed blockade of the port of Canton, even his proceedings in regard to the case of Lin Weihe—all were condemned, and his conduct was said to have been characterised by a want of frankness and good faith.

Lord Melbourne replied on behalf of the Government. He agreed that the British Government and British subjects had no right to inquire into the sincerity of the Chinese Government, or to question its motives for the prohibition of the importation of opium, but pointed out the objections, which existed, to any co-operation on the part of the British Government in the enforcement of such a prohibition. "The law "of that country being known," he said, "it should be respected, and no country "should encourage or abet in its subjects the violation of the laws of another. At "the same time, it was matter of question, how far one country could enforce the "prohibitory laws of another, and how far the Government of the one could prevent "the violation particularly of the fiscal revenue and protective laws of the other."

He admitted that the opium trade had been the immediate cause of the rupture, but observed that the trade had been carried on and increased by the connivance of the Chinese authorities at Canton; and, in defending the Government, defended also Captain Elliot, who had, as he said, "conducted himself throughout with the greatest "coolness, ability, and judgment."

The Duke of Wellington supported the Government, and moved, as an amendment, the previous question. He was not satisfied as to the sincerity of the Chinese Government in regard to the prohibition of opium, and was doubtful how far the interruption of amicable relations had been due to this cause; and described Lin's proceedings as "an insult and injuries, such as he believed had never been before inflicted on this country." He passed also a warm enconium upon Captain Elliot's courage and self-devotion.

Earl Stanhope, when moving the Resolution, declared his intention of pressing the question to a division, however small the number might be, who were prepared to vote with him. He met, however, with no support. Lord Lyttleton and others, who spoke, were ready enough to admit that there had been faults on both sides, but held that under the circumstances war was inevitable, and that whatever might have been the merits of the quarrel in the first instance, the Chinese had put themselves in the wrong by Lin's proceedings subsequent to the seizure of the opium; and the Duke's amendment was agreed to without a division.

A description of the war is not required in this narrative, but some of the leading incidents may be briefly referred to. The first expedition despatched from India arrived in China in the summer of 1840; and a blockade of the port of Canton was declared in the month of June. The force then moved northwards, and Chusan was occupied on the 5th July. In the month of August Captain Elliot, who was associated with Rear-Admiral Elliot, as Joint British Plenipotentiary, proceeded to Taku, at the mouth of the Peiho River; and, after some discussion, Keshen, the Governor-General of Chihli, was deputed to negotiate with him at Canton. Rear-Admiral Elliot was compelled by illness to leave China in the month of November, and Captain Elliot became sole Plenipotentiary. Negotiations were commenced, but the intentions of the Chinese were secretly hostile; and in January 1841 a discovery of their perfidy led to the immediate capture of the forts at Chuenpee and Tykoktow. A cessation of hostilities followed, and a Treaty was negotiated by Keshen, which provided for the cession of Hong Kong, the payment of an indemnity of six millions of dollars, the establishment of direct official intercourse upon equal terms, and the immediate resumption of trade. Chusan was evacuated by the British troops in consequence of this arrangement.

Letter from Captain Elliot to the Earl of Aberdeen, dated 25th June 1842; presented to Parliament in March 1843; "China," 1; Sir John Davis; and Narrative of the Combined Naval and Military Operations in China," by W. D. Bernard, Esq., 1844.

The Treaty was repudiated by the Emperor; Keshen was degraded; and the Chinese troops were ordered to "root out the rebellious barbarians." Hostilities were accordingly resumed at Canton; and the forts at the Bocca Tigris were captured by Sir Gordon Bremer on the 26th February 1841. The British squadron then moved up the river. A fortified position at the first bar was stormed, and the river-side

defences of Canton were carried; but the city was not occupied, and on the 20th March an armistice was concluded, and terms were agreed to by Captain Elliot, which enabled the trade of the season to be disposed of. The Chinese, in the meantime, continued their military preparations, and the suspension of hostilities was temporary only. On the 21st of May another collision occurred, and the riverside defences of Canton were carried a second time, and the heights above the city were occupied by the British troops, under Sir H. Gough. The city, however, was again spared, though the people showed plainly that they were not cowed; and a Convention was concluded, which provided for the immediate payment of six millions of dollars as the ransom of the city, and for a further payment of 80,000*l.* as compensation for the burning of the "Bilbaino" and for losses sustained by British subjects in consequence of the destruction by the Chinese of the foreign factories at Canton; for the evacuation of the city by the troops from other Provinces and the departure of the Imperial Commissioners; and for the resumption of foreign trade upon the withdrawal of the troops. The trade at Canton appears to have been continued, in accordance with this Convention, without serious interruption, throughout the subsequent operations.

Sir H. Pottinger, who had been appointed to the charge of affairs as Minister Plenipotentiary by the British Government in May 1841, arrived at Canton in the month of August. Captain Elliot, who was superseded, returned to England; and from this time more effectual measures were taken to compel the Chinese Government to submit.

The scene of hostilities was transferred to the north-east coast. Amoy was taken, and the island of Koolangsoo, which commanded the town and harbour, was held by a British garrison. Chusan was occupied a second time on the 1st October 1841; and the army of the Tartar Governor Yukien, who had distinguished himself by flaying alive the master of a British ship, who had fallen into his hands, was routed with great slaughter at Chinhae. Ningpo was captured without resistance on the 13th October.

A period of comparative inactivity followed, and at the commencement of March 1842 the Chinese were emboldened to attempt an attack upon the British force at Ningpo. The attack was, however, easily repulsed, and the British troops resumed the offensive. The Chinese army of Chekeang was defeated at Segaon; the defences at Chapoo and Woosung were successively carried without much difficulty, and the British force, consisting of 15 ships of war, 10 steamers, and above 50 transports, then proceeded up the Yang-tse-Keang River. Chinkeangfoo, which guarded the openings of the Grand Canal below Nankin, was stormed on the 20th July, after a more determined resistance than had up to that time been offered. The defending force, which was composed of Manchu Tartars, lost heavily, and the British had more men killed than in any of the previous engagements. On the 4th August the "Cornwallis" flagship anchored off Nankin; and, on the 10th, the disembarkation of British troops was commenced.

The Chinese had by this time profited by experience, and Commissioners Keying and Elepoo, who were both men of ability and moderation, were appointed to sue for peace. During the negotiations some symptoms were shown of vacillation, and preparations were made for an attack upon Nankin. The Chinese, however, gave way, and an honourable treaty of peace was signed, on the 29th August 1842, on board the "Cornwallis" by Sir H. Pottinger and the Chinese Commissioners.

The principal provisions of the Treaty were:—

Treaty between Her Majesty and the Emperor of China, signed in the English and Chinese languages at Nankin, on the 29th August 1842, with other documents relating thereto, presented to Parliament in 1844.

British subjects were permitted to reside, with their families, and trade at the five ports of Canton, Amoy, Foochowfoo, Ningpo, and Shanghai; and Superintendents, or Consular Officers, were to be appointed at each of the ports. The Hong monopoly was to be abolished at Canton; and the Chinese Government agreed that no system of the kind should be introduced at the other Treaty ports, and that British subjects should be allowed to carry on their business, at all the ports, with any persons they pleased. Three millions of dollars, which were due from some of the Hong merchants at Canton to British subjects, were to be repaid by the Chinese Government.

Hongkong was ceded in perpetuity to the British Government, to be governed by such laws and regulations, as should be thought fit.

The Chinese Government agreed to pay an indemnity of twelve millions of dollars on account of the expenses of the British expedition, in addition to the six millions already paid as ransom for the city of Canton; and to pay the "sum of six "millions of dollars as the value of the opium, which was delivered up at Canton in "the month of March 1839, as a ransom for the lives of Her Britannic Majesty's

"Superintendent and subjects, who had been imprisoned and threatened with death "by the Chinese High officers."

A fair and regular tariff of export and import customs and other dues was to be established and promulgated for general information at each of the Treaty ports, and British goods, paying import duty in accordance with the tariff, were to be admitted to any province or city in the interior of China, on payment of a further amount of transit duty; which, by a subsequent declaration, signed on the 26th June 1843, (on the day that the Ratifications of the Treaty were exchanged at Hongkong,) was not to be raised above the rates then existing.

The forms of address to be used in official correspondence between representatives and officials of the two nations were fixed and prescribed.

The twenty-one millions of dollars were to be paid as follows: six millions at once, six in 1843, five in 1844, and four in 1845.

The troops were to withdraw from Nankin on payment of the first instalment and on receipt of the assent of the Emperor to the treaty; and Koolangsoo and Chusan were to be held until the money payments and arrangements for opening the ports should be completed.

In regard to opium, as will be observed, the only stipulation in the treaty was that, which provided for the payment of an indemnity of six millions of dollars for the opium delivered up at Canton.

In the instructions issued to Rear-Admiral Elliot and Captain Elliot on the 26th February 1841, and to Sir H. Pottinger on the 31st May 1841, Lord Palmerston directed them to endeavour to obtain the legalisation of the opium trade, so as to prevent in the future the possible interruption of friendly relations between the two countries by opium smuggling. The instructions, which explain very clearly the attitude of the British Government in regard to the trade, are reproduced below *in extenso*:—

"Viscount Palmerston to Rear-Admiral Elliot and Captain Elliot.

"Gentlemen,

Letter from Lord Palmerston to Rear-Admiral Elliot and Captain Elliot, dated 26th Feb. 1841; page 1 of Papers relating to the Opium Trade in China, 1842–1856 presented to Parliament in 1857.

"Her Majesty's Government having taken into their consideration the circumstances connected with the China opium trade, I have to instruct you to endeavour to make some arrangement with the Chinese Government for the admission of opium into China as an article of lawful commerce. In bringing this matter before the Chinese Plenipotentiaries, you will state that the admission of opium into China, as an article of legal trade, is not one of the demands, which you have been instructed to make upon the Chinese Government; and you will not enter upon the subject of it in such a way as to lead the Chinese Plenipotentiaries to think that it is the intention of Her Majesty's Government to use any compulsion in regard to this matter.

"But you will point out that it is scarcely possible that a permanent good understanding can be maintained between the two Governments, if the opium trade be allowed to remain upon its present footing.

"It is evident that no exertions of the Chinese authorities can put down the trade on the Chinese coast, because the temptation, both to the buyers and to the sellers, is stronger than can be counteracted by any fear of detection and punishment. It is equally clear that it is wholly out of the power of the British Government to prevent opium from being carried to China; because, even if none were grown in any part of the British territories, plenty of it would be produced in other countries, and would thence be sent to China by adventurous men, either British or of other nations. But the present state of the Chinese law upon this matter makes the trade illegal; and illegal trade is always attended with acts of violence, both on the part of those who are employed to prevent it and on the part of those who are engaged in conducting it.

"But battles between Chinese war junks and British smugglers have a necessary tendency to produce unfriendly and embarrassing discussions between the British and the Chinese Governments; or, at all events, to keep alive hostile feelings between the British and the Chinese people. It would seem, therefore, that much additional stability would be given to the friendly relations between the two countries, if the Government of China would make up its mind to legalise the importation of opium upon payment of a duty sufficiently moderate to take away from the smuggler the temptation to endeavour to introduce the commodity without payment of duty.

"By this means, also, it is evident that a considerable increase of revenue might be obtained by the Chinese Government, because the sums, which, are now paid as bribes to the custom-house officers, would enter the public coffers in the shape of duty.

"I am, &c.

"(Signed) Palmerston."

## Viscount Palmerston's Instructions to Sir H. Pottinger respecting Opium.

"It is of great importance, with a view to the maintenance of a permanent good understanding between the two countries, that the Chinese Government should place the opium trade upon some regular and legalised footing. Experience has shown that it is entirely beyond the power of the Chinese Government to prevent the introduction of opium into China, and many reasons render it impossible that the British Government can give the Chinese Government any effectual aid towards the accomplishment of that purpose. But while the opium trade is forbidden by law, it must inevitably be carried on by fraud and violence: and hence must arise frequent collisions and conflicts between the Chinese preventive service, and the parties who are engaged in carrying on the opium trade.

Lord Palmerston ... ger respecting ... Papers relating ... Trade in China, ... presented ... in 1857.

"These parties are generally British subjects; and it is impossible to suppose that this private war can long be carried on between British opium smugglers and the Chinese authorities without events happening which must tend to put in jeopardy the good understanding between the Chinese and British Governments.

"Her Majesty's Government make no demand in regard to this matter, for they have no right to do so. The Chinese Government is fully entitled to prohibit the importation of opium, if it pleases; and British subjects, who engage in a contraband trade, must take the consequences of doing so. But it is desirable that you should avail yourself of every favourable opportunity strongly to impress upon the Chinese Plenipotentiary, and through him upon the Chinese Government, by all the arguments which will naturally suggest themselves to your mind, how much it would be for the interest of the Chinese Government itself to alter the law of China on this matter, and to legalise, by a regular duty, a trade which they cannot prevent."

Sir H. Pottinger, on the 27th August 1842, addressed a memorandum to the two Chinese Commissioners and to Governor-General Newkeen, setting forth these instructions, and pointing out that as long as there was a demand for opium in China, it was certain to be imported, and that prohibition of the cultivation of the poppy in British India, even if that were possible, would not prevent a trade in the drug from the Native States in India, or from other countries in which the poppy was grown.

Pages 1 and 2 of Papers relating to the Opium Trade in China 1842–1856; presented to Parliament in 1857.

The Chinese Commissioners, were unwilling to make any representation on the subject to the Emperor, and returned the following reply:—"On the withdrawal "of the prohibition against opium, it is not expedient at this time hastily to make any "representations to the throne. But the officers of China shall certainly be enjoined "to confine their jurisdiction in that respect to the soldiery and people of the country, "not allowing them to make use of it. Whether the merchant vessels of the various "countries bring opium or not, China will not need to inquire or take any proceedings "with regard thereto."

Page 3 of the above Papers.

## Conclusion.

The preceding narrative is believed to be absolutely fair and impartial. Its object is to state facts, and any lengthy discussion of the causes of the war, or of the question how far the British Government and British subjects were to blame in connexion with it, would be out of place. In a matter also, which has been the subject of so much controversy, and upon which statesmen of such eminence differed so widely in their views at the time when the occurrences were fresh in memory, my personal opinions can hardly be of any consequence. The nature of the conclusions arrived at is, however, briefly indicated in the following paragraphs.

The opium trade was undoubtedly the immediate cause of the rupture between the two countries, though the attitude of the British Government towards the Chinese and towards opium was such that, if the Chinese Government had pursued a less violent and aggressive policy, hostilities might easily have been averted, even after the compulsory surrender of the opium owned by British subjects.

The measures, first taken by Lin to obtain the surrender of opium then on the coast of China, can conceivably be defended on the supposition that he did not intend to do more than confine or imprison the traders; and personally I cannot help thinking that Captain Elliot had no sufficient justification for requiring the delivery to him of the opium for the service of Her Majesty's Government. If we leave out of sight his gallant and chivalrous conduct, his proceedings on the occasion appear to have been at variance with the instructions communicated by Lord Palmerston in June 1838, to the effect that any loss which British subjects might sustain in consequence of the more effectual execution of the laws of China

upon the subject of opium must be borne by themselves. It may of course be argued that Lin's proceedings were not in accordance with the laws of China; but the immunity, which foreigners had enjoyed, from the penal provisions of the Chinese fiscal laws, rested apparently more upon sufferance than upon any inherent or asserted right, and as nearly every foreign merchant in Canton was concerned in the opium trade, proceedings directed against them alone would not have been indefensible. The treatment accorded to the British Superintendent was, however, a national affront, which the Government could hardly have failed to resent.

Captain Elliot's "momentous circular" left three courses open to the British Government: to disavow his proceedings, to reinburse the merchants, who owned the opium, at the expense of the revenues of Great Britain, or to compel the Chinese Government to pay. As Lin's measures were a complete innovation upon Chinese practice, and, it may be said, upon Chinese law, it is hardly surprising that, when hostilities were forced upon the British Government, the third course was adopted.

The surrender and confiscation of the opium was not, moreover, the only cause of the rupture. The demand made by Lin for the execution of bonds, binding the executants to agree on behalf of all British subjects, at that time and in the future, to submit, at the discretion of the Chinese authorities, to the punishment of death and confiscation of ship and cargo, in the event of the importation of opium in any quantity, was one that could not possibly be complied with; and this demand operated as much if not more than the surrender of the opium to produce the hostilities, that followed. The Americans certainly executed the bonds, but they probably knew well enough that the submission thus yielded would be temporary, and that the course of events would ere long deliver them from the dangerous responsibility which they had assumed.

The demand also for the surrender of a British subject for trial (so called) by the Chinese for the murder of Lin Weihe, was one which Captain Elliot was justified in resisting to the utmost. The immunity from punishment for criminal offences which had been enjoyed by the British subjects in China for many years was deplorable; but the Chinese were responsible for the state of affairs thus created. They only claimed to exercise jurisdiction in cases in which a native had met his death at the hands of a foreigner, and their law on the subject of homicide was so brutal, and their administration of it was so glaringly iniquitous, that British subjects cannot be blamed for refusing to submit themselves to it. Difficulties of jurisdiction prevented the effective establishment of British Courts of Criminal justice in China. Negotiation might have removed these difficulties, but the Chinese Government would not negotiate.

Page 106 of the Correspondence relating to China; presented to Parliament in 1840.

"A case of homicide, as your Lordship is aware," wrote Sir G. Robinson to Lord Palmerston, on the 1st December 1835, "will be the event most fraught with difficulty "and anxiety . . . . . In the event of so unhappy a catastrophe occurring as the "death of a Chinese, we are helpless in Canton; we must give up a man or men, or "certain individuals in the first instance, and finally the officers of the Commission "are threatened, annoyed, insulted, and ultimately compelled to retreat without the "river, as in the case of the Company's factory in 1821–22, and then perhaps, and not "till then, is the affair brought to some termination."

See above, page 200

Notwithstanding the opinion expressed by Captain Elliot in his letter to Lord Palmerston dated 21st October 1839, regarding the negotiations in September and October of that year, it seems most improbable that a man of Lin's character would have ever relinquished the Chinese claim of a life for a life. He was imperious and resolute, and was not likely to have given way upon a point to which all Chinese attached so much importance. He might possibly have been satisfied with a subterfuge, but this even is doubtful; and no proceedings of the kind were possible in the altered state of affairs in China. Even in 1833, the Company's servants had faced the risk of an interruption of the Company's trade rather than appear to assent tacitly to such proceedings.

As to the other events, which immediately preceded hostilities, even if we acquit Lin and the other Chinese authorities of any participation in the cruel attack upon the "Black Joke," the burning of the "Bilbaino," admittedly on the supposition that it was an English ship, was an indefensible outrage, which alone would have justified a peremptory demand for reparation.

In the affair at Kow Lune, Captain Elliot certainly fired the first shot, but the complete stoppage of provisions was an act of hostility; and the notice regarding the poisoning of the water at Hong Kong, provoked, if it did not entirely justify, retaliation. Neither this incident, however, nor the projected blockade of Canton was of vital importance. The Chinese were evidently satisfied with their supposed

victory at Kow Lune; and the blockade was not once referred to by Lin or other Chinese officers during the progress of the final negotiations in September and October.

The negotiations do not require much notice. The consignee and captain of the "Thomas Coutts" acted, as British merchants in China often did, with a selfish regard for their own commercial interests, but Captain Elliot's scheme for carrying on the trade, outside the Bocca Tigris, contained the elements of failure.

On the 27th October, Lin practically declared war; and the naval engagement at Chuenpee, on the 3rd November 1839, was a necessary act of self-defence. The Chinese Admiral admitted in unmistakeable terms that he intended to seize "the "murderous foreigner, who killed Lin Weihe," by force.

In respect to the opium trade there is, as Mr. Gladstone pointed out in his speech in 1840, a great difference between the conditions, under which it was carried on, when the Select Committee of the House of Commons submitted their reports in 1830–32, and the conditions which existed when the Chinese Government had, after a period of vacillation, decided finally, in 1836 37, to put it down. This decision was for the first time communicated to the representative of the British Government in the summer of 1837, and the first communication, that can be regarded in any sense as official, was made in November of that year. Captain Elliot's letters on the subject of this communication, were received in England on the 15th May 1838, and Commissioner Lin arrived in Canton in March 1839. Allowing five months, therefore, for the transmission of a reply, the British Government had about five months to consider the question and take action, with any possibility of their action averting the impending rupture.

It is, perhaps, unfortunate that a Special Commissioner was not despatched, as proposed by Captain Elliot, to discuss the opium question and other matters with the officers of the Chinese Government; but the contemptuous dismissal of Lord Amherst's embassy, and the manner, in which the communications of the Local Government at Canton were made to the Superintendent, were not calculated to encourage the British Government to attempt further negotiations with the Court at Pekin. Captain Elliot himself also, when recommending the appointment of a Special Commissioner, clung to the idea that the trade would be eventually legalised, and Her Majesty's Ministers were even at this time distrustful of Chinese sincerity.

The remarkable growth of the opium trade subsequent to 1830, which forced the subject upon the notice of the Chinese Government, was not a matter for which either the Government of Great Britain or the Government of India was responsible. If the Indian Government had succeeded in its attempt to restrict the export of opium from the Native States, the quantity of Indian opium, reaching China, might have been permanently regulated and restricted.

The Chinese Government was, apparently, sincere in the first instance in prohibiting the importation of opium, as an article which was believed to be injurious to morals and health: but the connexion between the opium trade and the exportation of sycee silver, and the growing audacity exhibited by the foreigners, were the motive causes that induced the Emperor and his advisers to attempt in earnest to suppress the trade. Otherwise the interdict against opium would probably have remained, like the Imperial edicts which were issued against tobacco, a luminous, but useless, manifestation of Celestial benevolence. The extensive production of opium in the western province of Yunnan, which was referred to by Choo Tsun in 1836, appears to have been accepted with comparative equanimity.

The question, how far the British Government would have been justified in restricting the liberties and curtailing the pecuniary profits of its own subjects in India, and of the Rulers and subjects of feudatory States in that country, from a desire to meet the wishes of the Chinese Government, and how far such a policy, if adopted, would have been practically possible, is one upon which no opinion is expressed, owing to the circumstances under which this narrative has been written.

In respect to the more remote, but not less important causes of the war, it is necessary to remember that the interdict against opium was not the only law of the Empire that was disregarded and violated by our countrymen in China. Bringing foreign women to Canton, riding publicly in sedan chairs, the distribution of religious tracts, and the employment of native servants were all serious offences in the eyes of the Chinese: and the defiant attitude assumed by the Select Committee of supracargoes in 1829–32 and Lord Napier's proceedings in 1834 were eminently calculated to offend and alarm a haughty and suspicious government. Lin's measures at Canton were taken in pursuance of a deliberate policy, and were evidently intended to reduce the

foreigners to submission and to enforce obedience in the future to the laws and regulations of China in other matters as well as to suppress the trade in opium.

The following observations made by Mr. Charles Buller in the debate in the House of Commons in 1840 are worthy of reproduction. "The conclusion," he said, "at which he "had arrived after the perusal," (of all the recent publications relating to China,) "was, "that no sagacity on the part of Her Majesty's present Ministers could have averted, "or even staved off, what seemed to him to be the inevitable consequences of free "trade with China established on the footing on which we placed it in 1833 . . . "Faults there had, undoubtedly, been on both sides, for he must frankly say that "he was by no means convinced that the Chinese had been the only parties to blame; "but the faults on our side had been faults of the general policy pursued by us as "a nation. Our error dated from that period, when, having determined to throw open "the trade to all our countrymen, we left it on a footing in which it was utterly "impossible for it to continue with either honour or security. He would not say "that we were wrong in taking away the East India Company's monopoly of the "China trade; but if we were right in that, we were very wrong in not perceiving "that that step was calculated to disturb all our existing relations with the Chinese, "and we were wrong in not making that complete change, in our whole mode of carry-"ing on the trade which ought to have accompanied the one that we did make. He "must confess that when he looked back to the change which we made in 1833, and "considered the footing upon which that change placed our relations with the "Chinese, he could not but regret that our information at that time was so incomplete, "that we did not perceive that continued and serious collision must be the immediate "result of the position in which we placed ourselves."

In a few words, the withdrawal of the East India Company's monopoly made war, sooner or later, inevitable. As Mr. W. S. Davidson, the senior partner of one of the two leading private firms then at Canton, told the Select Committee of the House of Lords in 1830, the country had then before it two alternatives: to give up drinking tea, or to insist upon the establishment of an amicable, reasonable, and mutually advantageous intercourse. A continuance of the Company's monopoly might possibly have prevented the war. The advantages which the Company derived from the China trade were so great, that the Directors were content to compel their servants to submit to much personal humiliation, and the extensive powers, possessed by the Select Committee, enabled them to control and keep in order the private traders. The supracargoes, however, were human, and the Company had often great difficulty in maintaining peace.

In 1833 the Government decided, with the assent of Parliament, that the powers possessed by the Select Committee should be continued to the Superintendents; but when it came to practice it was felt intolerable that any officer of Government should have the power of deporting, at his discretion, any British subject, or of ordering away any British ship from the Chinese coast.

It was not to be expected that British subjects, unaccustomed to such indignities in any quarter of the globe, should put up for ever with Chinese arrogance and insolence; and the commercial instincts of the nation, and the importance of the tea trade, precluded the possibility of withdrawal from so profitable and so necessary a market.

The circumstances, under which the collision eventually occurred, were not, it must be admitted, creditable to this country; but it is incorrect to say that the war was undertaken to force opium upon the Chinese.

R. M. DANE.

7th January 1895.

# APPENDIX D.

## Despatch from the Secretary of State for India to the Government of India.

### No. 7 (Revenue), dated 22nd January 1885.

### China—Chefoo Convention.

In continuation of my despatch No. 9 (Revenue) of 8th February 1883, and with reference to the telegraphic correspondence marginally noted, I forward, for the information of Your Excellency's Government, copy of correspondence which has passed on the subject of the negotiations with China on the opium question since the date of the despatch above cited.

*Secretary of State to Viceroy, dated 24th December* 1884.

Opium. Pedder's demi-official to Colvin of 10th October last. Chinese accept in effect Lord Granville's proposals of 27th April 1883, but insist on 80 taels. For political reasons I propose to agree. Have you any objection?

*Viceroy to Secretary of State, dated 3rd January* 1885.

Your Lordship's telegram dated 24th December. It should be made quite clear that British Government will have right to end arrangement at any time if Chinese Government fail to stop separate collection of li-kin; also that right of British Government to end engagement is not to depend on consent of other Treaty Powers. We think Chinese Government should have right to vary the duty for each port subject to the fixed maximum. In view of serious loss of revenue which we estimate at 25 lakhs of rupees minimum, and of uncertainty as to power of Chinese Government effectively to abolish internal collection of li-kin, we think 70 taels mentioned in your telegram of 6th December 1882, and agreed to in our telegram of 26th idem, sufficient concession, and we are consequently most unwilling to assent to proposed rate of 80 taels, finality of which, moreover, is very questionable.

1. Foreign Office letter of 17th March 1883, with accompaniment, being memorandum by the Marquis Tsêng, dated 12th March 1883.
2. India Office letter to Foreign Office of 29th March 1883.
3. Foreign Office letter of 16th April 1883, with annexure.
4. India Office reply of 25th April 1883.
5. Foreign Office letter of 30th April 1883, with two annexures, being memorandum and confidential note dated 27th September 1883.
6. Foreign Office letter of 8th December 1884, with annexure, being memorandum by the Marquis Tsêng, dated 27th September 1884.*
7. India Office reply, dated 28th January 1884.

2. These papers will fully inform Your Excellency of the present position of the negotiations. I have further only to explain, more fully than has been done in paragraph 4 of the letter to the Foreign Office, dated 20th instant, the reasons which have induced me to communicate to Lord Granville my assent to the conclusion of the agreement with China on the basis of a rate of 80 taels commuted li-kin, should His Lordship find that the negotiations cannot be brought to a satisfactory termination if that rate is not conceded.

3. In the first place, should the present negotiations fail on the question of the rate, the Chinese Government will be able to, and in their present financial position certainly will, impose upon Indian opium, as soon as it leaves the custom house at each port, the highest rate of li-kin it can possiby bear, perhaps 100 taels or more. This is distinctly intimated in the Marquis Tsêng's memorandum dated 27th September last. In that case, Indian opium will be burdened at least as heavily as it would be under the 80-tael uniform rate, and none of the advantages (free circulation in the interior, etc.) will be secured, which that arrangement would give it. On the other hand, China would not obtain the advantages she anticipates from the proposed arrangement of her whole opium revenue being levied by one Imperial Department, of the li-kin revenue being taken out of the hands of the Provincial Governments, and of prevention of smuggling. Her Majesty's Government would therefore be represented as in the invidious position of refusing to China an arrangement which would benefit her, while not securing any real advantage to the Indian revenue.

4. Next, the calculation contained in paragraph 5 of this office letter to the Foreign Office, dated 20th instant, is based upon figures for the five years ending 1880–81, the last period for which there is any information as to the amount of the Chinese li-kin revenue. The gain to China which that calculation shows has probably been to some extent discounted by subsequent enhancements of the local rates of li-kin, which it is known have been effected in several places. It is thus possible that the actual increase of the Chinese taxation of Indian opium over the taxation which it now bears, and the consequent injurious effect on the Indian revenue, will be less than is anticipated by your Government, and I may remind your Excellency that Sir T. Wade has always been of opinion that Indian opium would bear a uniform rate of 110 taels (including tariff duty): Sir R. Hart, of over 120 taels, without the import being seriously diminished. It is not then, I think, certain that the difference of 10 taels in the uniform rate will cause so large a loss to India as is anticipated by your Excellency. But even should this loss

* In China Papers 5 of 1885 (C.—4735) the date is given as 30th September.

amount to so large a sum as 25 lakhs annually, it appears to me worth while to incur this sacrifice in order to settle the opium question with China for at least five years: to give greater security to the future opium revenue, now in some danger on account of troublesome political questions which would be disposed of and to protect the in trade Indian opium against unequal, unexpected, and oppressive enhancements of the local li-kin duties.

5. Again, it will be seen from the Marquis Tsêng's memorandum of March 12th, 1883, that the Chinese Government consider the commutation of opium li-kin a necessary preliminary to the abolition, which they have in contemplation, of li-kin on goods other than opium. It is true that no engagement is made that this measure will be immediately carried out. But the argument makes it difficult to refuse to accede to arrangements which are represented as indispensable to the contemplated reform. That reform is a measure which has always been urged upon China by the other Treaty Powers, especially by Germany and France, and it would be unfortunate that Her Majesty's Government should appear to be standing in its way. It would also be beneficial to the trade of the United Kingdom with China, and it is not desirable that Her Majesty's Government should be represented as preventing it for the sake of the Indian opium revenue.

6. Finally, the anti-opium agitation in this country, already serious and likely to be yet more formidable in a new House of Commons, is a factor in the present question to be taken into grave consideration. For some time past the leaders of that movement in Parliament have been chiefly insisting on the injustice of preventing China from doing what she desires as regards the taxation of Indian opium. If the present Chinese proposals are accepted, the answer to this argument will be obvious and conclusive. You will observe that the Chinese Minister's memoranda of March 12th, 1883, and of September 27th last, admit unreservedly that the agreement now under negotiation is of the Chinese Government's own proposing and includes all that they desire. But should the negotiation be broken off on the question of the amount of the uniform rate, an answer would not be easy to frame, and I need not remind your Excellency that the adoption by the House of Commons of a resolution, such as has been repeatedly moved, condemnatory of your opium revenue, would prove embarrassing to your Government.

7. For these reasons, and because I am strongly of opinion that, if this opportunity is allowed to pass, the chance of settling the opium question in concert with China is not likely to recur, I have decided, after careful consideration of the arguments adduced in your telegram of 3rd January, upon the course stated in paragraph 2 of this despatch.

(Signed) KIMBERLEY.

# APPENDIX E.

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# Part II.—Race and Occupation.

## SUMMARY.

| Profession. | No. of Witnesses. Total. | European. | Native. |
|---|---|---|---|
| Officials at head-quarters or attached to the Government | 14 | 14 | — |
| „ Divisional and District | 51 | 31 | 20 |
| „ Political (Residents or Agents for Native States) | 6 | 5 | 1 |
| „ Opium and Excise Departments | 14 | 11 | 3 |
| „ Pensioned | 12 | 3 | 9 |
| Military officers | 27 | 13 | 14 |
| „ pensioners | 9 | — | 9 |
| Chiefs and officials of Native States | 87 | 3 | 84 |
| Landowners and tenants | 88 | 4 | 84 |
| Planters | 12 | 10 | 2 |
| Merchants, mill-owners, and bankers | 83 | 14 | 69 |
| Christian missionaries | 47 | 40 | 7 |
| „ medical missionaries | 15 | 15 | — |
| Medical practitioners employed by Government | 81 | 65 | 16 |
| „ „ private and pensioned | 65 | 13 | 52 |
| Schoolmasters and professors | 8 | — | 8 |
| Representatives of associations* | 52 | 9 | 43 |
| Religious teachers (non-Christian) | 5 | — | 5 |
| Lawyers | 27 | — | 27 |
| Journalists | 8 | 1 | 7 |
| Miscellaneous | (12) | (6) | (6) |
| *Civil engineers* | 3 | 3 | — |
| *Labour contractor* | 1 | — | 1 |
| *Municipal Commissioners* | 2 | — | 2 |
| *Actuary* | 1 | 1 | — |
| *Writer* | 1 | — | 1 |
| *College students* | 2 | — | 2 |
| *Without occupation* | 2 | 2 | — |
| TOTAL | 723 | 257 | 466 |

* Out of the 52 Representatives of Associations, 47 return special occupations or means of subsistence. Of the rest, two represent the Society for the Suppression of the Opium Trade, one an American Temperance League, and two are Natives of India, who only set forth on the record their connexion with the Association they represent.

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Would only be temporary and could be provided for, 17,910, 17,981–83.
Prohibition would not cause riots or disturbance, 18,036, 18,107, 18,206, 18,307.
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Effect of prohibition impossible to contemplate calmly, 19,530.
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Attempt to stop poppy cultivation would involve risk of civil war, 21,814.
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Not believed in as a remedy, 7248–52.
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Nothing can be said in favour of smoking, 27,466.
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Absolutely condemned as a vicious habit, 27,511, 27,559.
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Moderate use of opium is widespread, 14,303-5.
Habit has grown notwithstanding reduction in number of shops and increased price, 14,976, 14,981-89, 14,981-99, 15,042.
Very little consumption among the rural population, 15,324.
Almost unknown in the villages, 15,384.
Only 10 or 12 per cent. of opium-users take it habitually, 15,956-58.
General among all classes, 16,055, 16,902, 22,779.
Common amongst the poorer classes and small shopkeepers, 16,540.
Smoking is not common in the North-West, 16,544, 16,585-90.
Smoking not very prevalent; dens exist in Umballa, 16,684.
Prevails amongst the uneducated, peasants, traders, and sepoys, 17,422, 17,443.
Appears to be decreasing, 17,446, 17,464, 17,471.
Opium largely used, 18,090.
20 per cent. smoke in the North-West Provinces, 18,092-94.
Smoking more prevalent in cantonments than cities, 18,264.
20 per cent. of Lahore population eat opium, 18,429, 18,430.
A certain proportion of respectable labouring men smoke, 18,552.
Excessive use confined to the lowest classes, 18,957, 19,029.
Prevalent among Hindus and Mahomedans, chiefly among lower classes, 19,066.
Confined to no particular class or race, 19,353, 19,757, 19,777, 19,780, 19,837.
Chandu smoked a good deal in Ghazipur, 19,389.
Largely consumed by almost all Indian races, 19,434.
Consumption much larger among urban than rural population, 19,527.
Smoking restricted to small portion of urban population, *ib.*
Depends upon surroundings rather than race, 19,528.
More common in West than East, *ib.*
Races possessing finest physique and martial character most addicted to opium, *ib.*
Opium used mainly for non-medical purposes among all races of India, 19,719.
Common among all races, 19,883, 19,890.
Opium consumed by all classes in Jeypore, 20,268.
Occasional or habitual consumption almost universal in Rajputana, 21,443.
Very large per-centage of cultivating classes take opium, 21,942.
Proportion varies greatly; much higher in malarious districts, 22,010, 22,041-49.
Number of excessive consumers smoke, 22,016.
Chiefly used by warlike and turbulent classes, 22,385.
Educated people do not generally take opium, *ib.*, 22,441*a*-44.
50 to 75 per cent. of the Talukdars of Ahmedabad use opium, 22,688.
Number of habitual consumers considerably less than a generation ago, 22,700, 22,705.
Habit does not appear to be dying out, 22,734-37.
Numbers greatly diminished by enhanced price, and spread of education, 22,756, 22,768, 22,794.
Decrease in number of consumers desirable, 22,767, 22,796.
Most prevalent among Rajputs, Girasias, and Musalmans, 22,828.
Decreasing with spread of education, 22,851, 23,690, 23,708, 23,767.
Opium consumed by all castes, 23,261.
Smoking comparatively rare in India, 23,309, 23,333.
Consumption will become less as education advances, 23,612, 23,615.
Rising generation not inclined to take opium, 23,664, 23,750, 23,767-69.
Youths giving up opium and taking to alcohol, 23,864, 23,867-71.
Not limited to any class, race, or age, 24,113, 24,118.
Fewer consumers than 20 years ago, 24,195.

PREVALENCE OF HABIT—*continued.*

Consumption decreasing through spread of education and dearness of drug, 24,196, 24,222, 24,225, 24,239–43, 24,267, 24,283, 24,307, 24,384, 24,408–11, 24,523, 24,524, 24,551.
Use decreasing, as habit does not find favour with rising generation, 24,408.
Use of opium decreasing; probably due to increased indulgence in alcohol, *ib.*, 24,551.
Not general among higher castes, 24,566.
Smoking confined to a small and more or less degraded class, 24,590.
Appears to be little used in Bombay, 24,670.
Habit said to be decreasing, 24,926–36.
Insurance statistics show that 2 per cent. of the people use opium, 24,952–58.
All classes of Hindus and Mahomedans eat opium; a very small per-centage smoke it, 25,011.
Consumption in malarious districts chiefly as a prophylactic, 25,227.
Mostly confined to the poor and working classes in Bombay, 25,254.
From childhood people taught to believe in opium, 25,300.
Opium not used so commonly in Southern India as in the North, 25,350.
All races and classes eat opium, 25,508.
Less than 5 per cent. of population eat opium, *ib.*
Madak smoked chiefly by lower classes, *ib.*
Smoking increasing in Madras, 25,522, 25,534–45.
Casually used to a large extent, 25,901.
Not confined to any one class, 26,406.
Two per cent. use opium in Gujarat, 26,923.
Largely consumed in Rajputana, Malwa, Central India, Kathiawar, Gujarat, &c., 26,967, 26,970.
Proportion of habitual eaters per mille amongst various castes, 27,132.
Only a very small per-centage of people take opium, 27,461.
Not confined to any class or race, 27,730.
Statistics as to prevalence collected by missionaries, 27,825, 27,826.
Smoking chiefly confined to the lower classes, 27,885.
Old women and infants comprise most consumers, 28,047
No particular class abnormally affected by opium, *ib.*
Smoking almost wholly confined to towns, 28,082.
Only bad characters take to smoking, 28,097.
Ten to 15 per cent. of population use opium, 28,124.
Great increase in number of madak-smokers, 28,129.
Madak and chandu-smoking much less resorted to than eating; chiefly among the poorer classes, 28,142.
Increasing during last 20 years, 28,186.
Extensively used in the Punjab, Deccan, Assam, Central, East, and South-west Bengal, ii. 444.
Large numbers, especially of labouring classes, take opium, iv. 375.
Proportion of consumers in the Native States of Rajputana, iv. 392–99.

*See also under the various Provinces and Native States, and Races—Rajputs, Sikhs, &c.*

PRICE :

Price paid to cultivators, 3013–17.
In Assam, 3103, 3107–13, 5648–50, 5659.
Prices in various districts, 3195, 3201–3, 3205–8, 3235–37, 5036, 5064–68.
Kept down through fear of smuggling, 3206–8.
Government price in Orissa, 4523.
Assam Government wishes price raised, 5068–77.
Seriously affected by the change of currency, 5128–32.
Government price of poppy too low, 10,796–98, 10,806–8.
Government should not increase price paid, 10,844.
Has not been raised during last five years, 10,914–19.
Increased price would not render poppy cultivation more popular, 11,019–21.
Government price does not allow cultivator a fair profit, 11,201–15, 11,220, 11,249, 11,250, 11,314, 11,315, 11,328, 15,063.
Government price insufficient, 11,437, 11,438, 11,453, 11,455, 11,463, 11,472.
Memorials from ryots asking for higher rate, 11,786, 11,787.
Government should pay higher price or drop poppy-growing, 12,062, 12,063.
Not sufficiently high to admit repayment of advances in bad seasons, 12,084, 12,085, 12,144–48.

PRICE—*continued.*

Government purchasing and selling price should be raised, 12,374, 12,394.
Retail price at licensed shops, 12,945–52.
Licensed vendors charge what they like and increase their profit by adulteration, 13,040, 13,043.
Government rates too low, 14,473–80.
Increase in Government price unnecessary, 14,854.
Would lead to increased illicit dealing, 14,863–65.
High price checks consumption, 14,907.
Habit has grown notwithstanding increased price, 14,976, 14,977, 14,981–89, 15,042.
Selling price in the Native States, 16,222.
Policy of the Government to raise the retail price as high as possible, 18,154–57, 18,160.
If pushed too high would promote smuggling, 18,154.
Low price tempts consumers, 18,962, 18,981–88, 19,029.
Maintained as high as possible having regard to risk of smuggling, 19,520–22.
Sub-treasuries sell cheaper than licensed vendors, 19,574–79, 19,608–13.
Enhanced price greatly diminishes number of consumers, 22,756, 22,768.
Should be gradually increased to check habit, 22,805
Should be lowered to meet wants of poor consumers, 22,926–29.
Should be made so high that people would gradually give up opium, 23,269, 23,471.
Rise in price would inflict suffering on the poor, 27,433.
Increase has greatly reduced consumption, 28,051.
Government price gives good return to cultivator, i. 134.
Cost price of Excise opium, 1880–1 to 1893–4, ii. 342.
Estimated cost price per chest of provision opium, 1883–84 to 1892–93, ii. 345.
Price to vendors and retail price, ii. 348–54.
Treasury price in Bengal, ii. 427.
Retail price in Malwa and other parts of Central India, iv. 417.

*See also under the various Provinces and Native States.*

PRISONERS :

Allowed opium if health gives way, 1469–75, 1492–94.
Stoppage of opium rarely does harm, 1736.
Opium-eaters a perfect nuisance in jail, 1920, 1949–51.
When opium stopped they howl all night, 1920.
Native prisoners in India, 2138–42.
Mostly addicted to opium, 2143.
Opium forbidden except for medical use, *ib.*, 2144.
Effect of deprivation of opium, 2219–24.
Sometimes suffer considerably through stoppage of opium, 3411.
Opium stopped immediately in every case, 3709–21.
Opium-eaters compare favourably with drunkards and ganja smokers, 5170.
Supply not always cut off from prisoners, *ib.*
Deprivation has no bad effect beyond distress, 7380–86.
Pains caused by cutting off opium soon pass away, 7424; diarrhœa is apparent for two or three days, 7448–54; accompanied by inability to work, 7450, 7506–8.
Opium not given unless doctor orders it, 9660–64.
Opium-eaters do not seem to suffer after three or four days' stoppage of drug, 9766–70, 9806–12.
Opium only supplied on doctor's prescription, 10,428–38.
Occasionally suffer very much through deprivation of opium, 10,673–77.
Proportion of opium-eaters in Allahabad Central Prison, 12,459–63, 12,483, 12,484, 12,499–501.
4 or 5 per cent. excessive consumers, 12,567.
Per-centage of opium users, 14,058.
Statistics of health, 14,061.
Opium stopped but given afterwards if necessary to health 14,064, 14,065, 14,102–4.
Craving usually subsides within a week or so of admission, 15,910.
Seldom necessary to continue opium after admission, 15,911.
Usually resume habit on leaving jail, 16,547, 16,626, 16,627.
Very small per-centage addicted to opium, 16,577.
Less than per-centage of entire population, 16,580–84.
Per-centage less than of general population, 16,657.

PRISONERS—*continued.*

No serious ill-effects follow deprivation of opium, 17,266–72.
80 per cent. got bad diarrhœa which continued till opium restored, 17,422.
Health of prisoners improved by deprivation of opium, 18,247.
Dyspepsia and diarrhœa follow sudden stoppage of drug, 18,485–92, 18,499.
Few deaths consequent on stoppage of opium; patients suffering from chronic disease; death probably accelerated by stoppage, 18,513.
Stoppage of opium almost invariably followed by diarrhœa, 18,740.
Opium allowed to excessive consumers for a time, *ib.*
Sudden stoppage known to result in death through dysentery, *ib.*
Per-centage of opium consumers, 18,743–47.
Excessive consumers improve in health during confinement, 19,356.
Very small number addicted to opium, 19,391.
Notes of cases in Meerut Jail, 19,400.
Seldom any serious difficulty in stopping opium, 21,419, 21,420.
In British jails opium stopped, but restored if prisoner falls ill; given to consumers in Native jails, 21,828.
Subject to compulsory reduction of dose, 21,925.
Sometimes found impossible to discontinue opium, because of persistent diarrhœa, 22,016.
Opium allowed in Baroda State, 22,641.
Sometimes given small doses in case of illness, 23,431.
Opium suddenly stopped without ill-effects, 23,795, 23,818–20, 24,092–94.
Effects of stoppage of opium, 24,129.
Per-centage of opium-eaters in Junagadh Jail, *ib.*
Stoppage of drug often leads to diarrhœa or pains; moderate and gradually-diminishing doses sometimes acquired, 24,718.
Suffer at first from deprivation of opium, 25,931.
Statistics of opium-consumers in Ahmedabad Jail, 26,637.
Leave jail apparently cured of the habit, *ib.*
Habit broken-off by gradually diminishing doses, 27,387, 27,406–9.
Suffer terribly through deprivation of opium, 27,795–99.
Opium consumers in Junagadh Jail, 1889–90 to 1892–93, iv. 431.
Statement showing prisoners in Delhi Jail who were opium-eaters in 1893, v. 128–31.
Weights of prisoners (opium-smokers) for first four weeks' confinement in Victoria Jail, Hong Kong, 1890–92, v. 196, 350, 351.

PROHIBITION:

Opium should be prohibited except for medical use, 113, 114, 2272, 2274, 2601, 8622, 8646, 8808, 8809, 9442–44, 9467, 14,631, 14,657, 15,626, 19,288, 20,136, 24,301, 26,586, 27,217, 27,282, 27,339, 27,843.
Cultivation for medical purposes should be permitted, 713, 740.
Use of opium must be left to discretion of consumers, 1637.
Growth of poppy should be prohibited on moral grounds, 1802–21.
Petition in favour of prohibition presented, in 1859, by the Merchant Company of Edinburgh, 1820.
Would be very difficult, but habit should be checked, 1957–60.
Views of the Anti-Opium Association, 2457–66, 2481–85.
Benefit to the people would outweigh any deprivation to small classes, 2516–23.
Would be productive of commercial benefits to India and China, 2572–81.
Only sufficient opium for medicinal purposes should be grown, 2782–84.
No restriction can be placed on use of opium, 3730.
Would do more harm than good, 3758.
Manufacture and sale of opium should not be prohibited, 5989.
If not extended to use for medical purposes would be approved, 6265.
Sale or use of opium should be forbidden except at licensed houses, 7052–59.
Total abolition desirable, 7232, 7253, 7274, 7293–96.
Poppy growing should be prohibited, 7328–40.

PROHIBITION—*continued.*

Should be prohibited except as a medicine, 7803–10, 9853, 9932, 9935–43, 9951; with possible exception in favour of persons already consumers, 9854.
Prohibition except for medical use desirable, 9053, 9139, 9189, 9226–27, 9330, 10,237, 10,258, 10,259, 10,309, 10,621, 10,649–54, 13,033, 13,107–08, 13,194, 13,388–89, 18,104, 18,204, 20,049, 20,091, 20,136.
Would be a crime, 10,038.
Cultivation should be prohibited in Behar, 11,369.
Not desired except by missionaries, 11,897.
Consumption as an indulgence should be prohibited, 13,110.
Both alcohol and opium should be prohibited, 13,162, 15,656, 16,812, 18,046, 26,441, 26,499–501, 26,518.
Should be effected gradually by severance of Government connexion with cultivation, 14,005–7.
Could only be justified on strongest moral grounds, 14,846–52.
Stands on different grounds in Burma and India, 14,875–77.
Prohibition except for medical purposes recommended, 15,009, 15,020–25, 28,172, 28,212–18.
Prohibition of cultivation the only remedy, 16,568.
Except for medical purposes absolutely necessary, 16,569.
Prohibition would be favourably received apart from fresh taxation, 16,572, 16,574–76, 16,617.
Opium should be stopped whether alcohol is or not, 16,714.
No interference should be attempted unless backed by public opinion, 16,750.
Liquor, chandu, charas, and ganja should be prohibited, 17,854.
Would be a good thing, but the people would not so regard it, 17,879.
Worthy of support, as habit injurious, 17,905, 17,906, 17,970–73.
People against it because they fear taxation, 17,939, 17,974–79, 17,988.
Opium should be allowed for medical or quasi-medical use, 17,948.
Consumers would like to see sale prohibited, 18,023, 18,024,
Not so necessary with regard to alcohol as opium, 18,083.
Sale should be prohibited except for medical purposes, and for habitual users, 18,305, 18,330.
Desirable, except for medical purposes and confirmed users, 18,364.
Should not be interfered with and such things as ganja permited, 18,616.
Government policy of non-interference with vice should not be departed from, 18,620.
Can only be safely checked by spread of education, 18,624.
No objection to prohibition if effected without taxation, and gradually, 18,843, 18,848, 18,857–63.
Habit is bad, but does not call for interference, 18,903.
Recommended if unaccompanied with additional taxation, 19,001–3, 19,029.
Benefits would be outweighed by inconvenience, 19,720.
Use of alcohol in England does not affect the question of opium in India, 19,935–40, 20,027–35.
No reason to limit sale because of a few cases of excess, 20,181.
Country cannot be reformed by law; regeneration should begin from within, 21,349, 21,367.
Is impolitic; should be left to spread of education, 22,282.
Government has no right to prohibit opium and permit liquor trade, 22,308.
Sale for non-medical use should not be prohibited, 22,718, 22,855, 23,628, 23,659, 23,707, 23,753, 23,778, 23,826, 23,866, 23,878, 23,911, 23,928, 23,951, 23,983, 24,000, 24,014, 24,204, 24,237, 24,258, 24,279, 24,364, 24,376, 24,428, 24,470, 24,499, 24,514, 24,554, 24,649, 24,660, 26,410.
Total prohibition not advisable, 22,796, 22,893, 22,912.
Undesirable both politically and financially, 22,835.
Should be left to education, 22,928.
Restriction only feasible policy, 23,333, 23,339, 23,354.
Traffic in opium as an intoxicant should be stopped, 23,457, 23,465, 23,473, 23,512.
Opium should decidedly be prohibited, 23,549.
People of India do not understand prohibitive measures, 24,014.

PROHIBITION—*continued.*

Refutation of objections to total prohibition of opium, 24,327.
Would not remove evil caused by present excessive use, 24,812.
Interference undesirable and inexpedient, 24,907.
No reason why growth of poppy and manufacture of opium should be prohibited, 25,225.
Growth of poppy and manufacture and sale of opium, should not be prohibited, 25,265.
Government should not leave reform to moral agency, 25,527.
Interference with use of opium not recommended, 25,854.
Universal practice of dosing infants an insuperable obstacle to prohibition, 26,049.
Mischievous, and calculated to do more evil than good, 26,064.
All kinds of intoxicants should be prohibited, 26,590.
Policy of restriction by law recommended, 27,022.
Opium-eating should not be prohibited, 28,124.

—— UNJUSTIFIABLE:

Reasons for suppression unsound and visionary, 1153.
Opium may be restricted, but prohibition is entirely unjustifiable, 1637.
Forcible prohibition would be justifiable, 2468.
Should not be forced on people who do not want it, 2060.
Quite unjustifiable, 2709.
Would make English rule unpopular, 6120.
Unjustifiable interference with rights of property, 6121, 6143–51.
Most unjustifiable interference with the liberty of the subject, 10,785.
If accompanied with increased taxation would be unjust and unpopular, 12,733.
Government interference unjustifiable, 16,024, 24,454.
Idea is a mere chimera, 19,530.
Unjustifiable and dangerous, 22,667.
Most impolitic and quite uncalled for, 23,184.
Would be as tyrannical as prohibition of beer in England; uncalled for and wantonly foolish, 24,577.
Prohibitive measures uncalled for and unjustifiable, 25,569.
No cause to prohibit the sale of opium in British India, 27,036.
No moral justification for restricting sale, iv. 495.

—— IMPOSSIBLE:

Could only be enforced in British territories by bloodshed; in Native States could not be enforced at all, 872.
Would take years to accomplish, 2818.
Impracticable at present, 3058, 3099–101.
Prohibition of sale except for medical purposes impossible, 4269, 4270, 4448, 5330, 5340, 5508, 14,071. 15,915, 16,902, 17,231, 22,385, 27,433, 27,574, 28,148.
Would be an utter impossibility, 4719.
Would be ineffectual if not extended to Native States, 4891.
Would be entirely inoperative, 4997, 4998.
Impossible by legislation, 6345.
Present arrangements satisfactory, and prohibition impossible except on paper, 8408–10, 8492, 8493, 8500.
Impracticable in Assam, 10,206, 10,362.
Total prohibition almost impossible, 10,947, 10,983.
Prohibition, except for medical use, impracticable, 12,585, 18,147, 22,719, ii. 461.
Impossible to put down even immoderate use by force, 13,841.
Could not be carried out unless extended to Native States, 17,341.
Impossible to stop cultivation, 19,649.
Impossible so long as produced in Native States, 19,720.
Quite impossible for Government to prohibit opium-growing, 21,025.
Would be very difficult to enforce, 25,014.
Perfectly nugatory unless extended to Native States, 26,157.
Utterly impossible to interfere with domestic habits of the people, 27,038.
Attempt to prohibit sale would be a disastrous failure, 27,396.
Impossible and most undesirable, 27,973.
Worse than useless to attempt it, i. 142.

PROHIBITION—*continued.*

—— DANGEROUS:

Suppression of cultivation would lead to grave political difficulties, 885, 953.
Would lead to political dangers of extreme gravity, 900.
Would be a grievous interference with social habits and customs, 1007.
Prohibition of cultivation would make the people disloyal, 1611, 1612.
Would cause utmost irritation, especially among Sikhs, 1611.
Would excite gravest discontent, 2062, 2063.
Would be an absolute political danger, 3189–92, 3210.
Would create dissatisfaction, 3798, 6166, 6916, 8566, 21,773, 21,782, 25,196.
Would be highly impolitic, 4508.
The suggestion has alarmed the people, 4577.
Would meet with strenuous opposition, 4999.
A very much smaller thing raised the Mutiny, 5694, 12,726.
Would produce universal dissatisfaction and disaffection, 5739.
Likely to be a disturbance in Assam if stopped all at once, 9227–32.
Not likely to meet with violent opposition, 9963, 10,017–21; might do so if accompanied with additional taxation, 10,019–23.
If opium stopped the Assamese would revolt, 10,038.
Would create universal discontent, 11,392.
Would cause the horrors of 1857 to be repeated, 12,348.
Legislative suppression would cause great political danger, 13,843, 13,845.
Restrictive measures would be strongly resented, 13,883.
Prohibition without increased taxation would create discontent, 14,075, 14,076.
Legislative interference would be resented, 14,231.
Interference with consumption might be resented actively, 14,309.
Most dangerous policy to tamper with long-established custom, 14,356.
Discontent would amount to grave political danger, 14,912; consequent increase of taxation would cause still greater discontent, 14,913.
Might lead to loss of India, 15,696.
Would arouse feelings of consternation and resentment, 15,700.
Quite impossible, might lead to popular revolt, 15,915.
Would entail serious discontent and entail danger to the Government, 16,019, 16,024.
People would resent interference, 16,220.
Would be most unpopular in the Punjab, 17,073.
Would be unpopular with Native soldiers, 17,084.
Would cause serious inconvenience and trouble, 17,852–54.
Would be a serious interference with local habits in Rajputana, 19,957, 19,959.
Would be resented if accompanied by increased taxation, 20,069, 20,118.
Ancient customs of the Rajputs would be greatly interfered with, 20,604, 20,699.
Apart from finance, would be highly impolitic, 21,655.
Would cause general discontent among the Rajputs, 21,766.
Prohibition of opium is impolitic, 22,282.
Would be exceedingly difficult and dangerous, 22,283.
Would lead people to believe that the Government intends to tamper with religion, 22,385.
Would lead to much discontent and misery, 22,898.
Would be regarded as an act of injustice, 23,561, 23,584, 23,597.
Would interfere with ancient customs and create dissatisfaction, 24,236, 24,256, 24,260, 24,278, 24,408, 24,628, 24,660.
People would not like interference with their use of opium, 25,264.
Would lead to political complications with Native States, 26,006.
Would cause general discontent in Gujarat, 26,149.
Would be regarded as an active oppression, 26,408.
Attempt to interfere with use of opium would be impolitic, 26,654.
Would cause serious dissatisfaction, especially in Native States, 26,759, 26,776, 26,777.
Interference would be a serious wrong and deplorable mistake, 27,396.

PROHIBITION, DANGEROUS—*continued.*

Would cause great discontent, 27,734.
Total prohibition of opium-eating would be impolitic, 28,028.
Would be most unpopular in the Punjab, i. 142.
Would be bitterly resented by all classes, apart from taxation, iv. 495.
Would cause dissatisfaction in the Punjab, v. 124, 126.

—— EFFECT ON FINANCE:

Would be a capital political error to deprive Native States of their revenue, 1165.
Effect on Foreign Exchange, 2075, 2076.
Possible financial objections, 2561.
Would entail loss of revenue, 3193, 6060, 23,380, 23,913.
Could easily embarrass the Government, 3421.
Would mean financial ruin in Behar, 12,320, 12,346, 12,375.
Would be a very bad thing for the Indian tax-payers, 12,520, 12,544–51.
Mr. Caine's letter on the financial question, 14,759–68, 14,789.
Would cause loss of revenue and subject people to new taxation, 19,877.
Would upset the entire economy of the producing States, 20,435.
Would mean financial ruin to opium-growing Native States, 23,104.
Would not entail very serious loss in Central India, 23,457.
Would result in great loss to India, 23,612.
India would lose income, while Persia would gain by prohibition, 24,516.
Only effect would be injury to Government, 24,856.
Would entail heavy expenditure for preventive measures, 25,226.
Would entail immense loss to Indian Revenue, 25,552.

—— —— ON AGRICULTURE.

Would seriously disturb the agricultural economy of the country, 4891.
Would be prejudicial to important agricultural interests, 6424.
Would ruin thousands of cultivators, 10,797.
Prohibition of cultivation a grievous interference, 10,841.
Would be an unmitigated evil and very unpopular, 12,373, 12,376.
Unnecessary; ruinous to cultivators; would lead to further taxation, 12,853.
Would ruin a great industry, 12,978, 12,987.
Would cause great distress among the agricultural class, 13,414, 13,415, 13,419.
Suppression of poppy-cultivation injurious, 13,677, 13,678, 13,680.
Would injuriously affect an industrious and poor class of tenants, 14,399.
Would cause much distress to cultivators, 14,896.
Partial prohibition in Rai Bareli raised a considerable outcry, 14,930–37.
Would cause great hardship to cultivators, 15,341, 16,468, 16,485, 16,503.
Would ruin people engaged in opium-cultivation and trade, 18,620.
Would ruin landlords and tenants, 19,777.
Would be a serious loss to Government and cultivators, 19,815.
Would cause great dissatisfaction among cultivators and users, 21,773, 21,782.
Would cause dissatisfaction among Native rulers and farmers, 25,196.
Would be disastrous to the zemindar and ryot, 25,233.

—— —— ON SMUGGLING.

Establishment of a customs line 2,000 or 3,000 miles long would be impossible, 885.
Effects on smuggling and trade, 2931.
Would lead to smuggling, 3190, 19,757, 25,015, 25,061, 25,196.
Would encourage smuggling and surreptitious cultivation, 3799.
Would lead to increase of smuggling, 4891, 6061, 17,256, 22,385, 26,049, 28,023, 28,113.
Would encourage smuggling, especially from Nepal, 5510.
Would encourage smuggling, 6425.

PROHIBITION, EFFECT ON SMUGGLING—*continued.*

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—— PREVALENCE OF HABIT:

Opium habit prevalent, 2246, 2249, 2250.
Per-centage of consumers, 20,416–20.
Excessive use uncommon, 20,596.
Cultivators and labourers generally take opium as a stimulant, 20,597–603.
Fifty per cent of the middle classes take it, 20,602.
Opium largely used in Rajputana, 20,854.
Opium habit among various races, 21,440–43.

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—— PROHIBITION:

Would inflict serious loss on cultivators, 20,435.
Would upset the entire economy of the producing States, *ib.*
Wholly impracticable, would lead to serious discontent, 20,768.
No precedent for right to interfere with growth of opium, 20,782.
No Native State has expressed willingness to prohibit cultivation, 20,791
Prohibition in India becomes a question of transit, 20,794–805.
Would involve a large increase in preventive establishment, 20,806.

—— TRANSIT:

Duty not settled by treaty; can be varied, 20,835.

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RAJPUTS:

One of the finest races physically in all India; almost invariably habitual consumers of opium, 872, 897–99, 927–30, 1009–14.
Six to eleven per cent. of Rajput soldiers take opium, 931.
Great majority, especially Native gentlemen, use opium, 1002, 1010–12, 1043.
Prohibition of non-medical use would be a grievous interference with habits and customs, 1007.
Habit probably first acquired through use when fighting, 1099.
One of the finest races, have been taking opium for generations, 1595, 1596.
Fond of liquor, if they can get it, 1599.
Largest consumers of opium; sturdiest people in the country, 2706, 22,582.
Considerable proportion take opium habitually, 3405, 3450.
Some Rajputs take opium from birth, 6040.
Seventy or eighty per cent. take it, 6047, 6057.
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Military services prove that moderate consumption does not demoralise, 16,219.
Fifty per cent. adult males eat or drink opium, 18,348, 21,761; about 7 per cent. to excess, 21,762.
Mahomedan Rajputs use opium as freely as the Sikhs, 18,434.
Ninety per cent. use opium, 19,729, 19,898, 23,184.
Fifteen per cent. take opium, 20,324.
Opium connected with their early military history, 20,789.
Seventy-five or 80 per cent. of men, 50 per cent. of women, take opium, 20,698.
Ten per cent. of the Rajputs in Ulwar take opium, 20,982.
Forty per cent. of men, 20 per cent. of women and 12 or 15 per cent. of children, take opium, 20,990.
Take opium in four forms, *ib.*
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Use of opium increasing, 21,581.
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Eighty per cent. use opium, 22,290.
Vast majority moderate consumers, 22,654.
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Using alcohol in place of opium, with frightful results, 25,990.
Extensively addicted to opium; a fine race, 28,016.
Morally, no way inferior to non-eaters, *ib.*
Accustomed to use of opium over 200 years ago, i. 133.
Many sturdy Rajputs take opium, and are none the worse, i. 142, 143.
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*See also* SALE.

## W.

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Many women use opium, 12,564.
Thirty per cent. of prostitutes consume opium, 12,652; 70 per cent. in Straits Settlements, v. 147 (par. 2).
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Opium-eating common after middle-age, especially among Kabulis, 16,088.
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About five per cent. of the females take it, 16,464.
Use opium less frequently than men, 17,101, 19,809, 20,168.
Rarely use opium, 17,151.
Opium-eating prevalent among higher-class women of Lucknow, 17,747, 17,780–83.
One-half the women of all classes eat a little opium, 17,747–60, 17,792–94.
Ten per cent. of Assamese women eat opium, and 20 per cent. smoke it, 18,348, 18,352.
Seventy-five per cent. of Assamese tea-garden coolie women smoke opium, 18,350.
Many native females take opium regularly, 18,769.
Take opium less than men, usually for disease, or through grief, 20,278.
Mostly use opium as medicine or a tonic in advanced age, 20,421.
Some women in Rajputana use opium habitually, 20,865.
Take opium in illness, 20,990.
Two per cent. of Rajput women take opium, 21,073, 21,082, 21,116.
Smaller proportion take opium than men; always for alleviating pain, 21,506.
Per-centage of consumers among zenana ladies said to be between 10 and 20, 21,511.
Forty per cent. of Rajput women use opium, 21,577.
Rajput women addicted to alcohol, 21,655.
Only widows and old women use opium among the Rajputs, 21,760.
Very rarely take it to excess, 21,762.
Ten per cent. of Malwa women take opium, 21,912.
Individuals found among all classes who take opium, 22,577.
Prostitutes, especially Mahomedan, take opium as a habit, *ib.*
Many women treated in hospital for injuries through opium, 23,390.
Use opium as a medicine, also as a stimulant, 23,874.
Very few use opium habitually, 24,118.
Should not be permitted to smoke madak, 25,293.
Generally contract habit between 25 and 30, or earlier when contracted on parturition, 25,396.

WOMEN—*continued.*
Generally commence habit about 30 for some ailment, 25,858.
Usually contract habit for disease, 26,286.
Considered a shame for a woman to smoke opium, 27,826.
Many resort to opium through pain of womb diseases, 27,828.
Much less used than by men; usually for disease, iv. 379.
Opium-eating in zenanas in Hyderabad, iv. 507, 508.

WORKMEN:
*See* EMPLOYÉS AND WORKMEN.

## Y.

YANG-YEN:
"Foreign smoke," Chinese name for opium, 1969–73.

YUNNAN:
*See* CHINA—YUNNAN.

YUNNAN OPIUM:
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Poppy not much grown 30 years ago, 7621.
Change to Indian opium bad for consumer, 7880–85.
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## Z

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# APPENDIX G.

## Glossary of Indian Terms used in the Evidence and Appendices.

| | |
|---|---|
| Abkari | Distillation ; spirit excise. |
| Adan | Superior irrigated land in Rajputana, &c. |
| Adda | A den, or small shop. |
| Adya | A noxious grass or weed, in Rajputana. |
| Afim, Affim, Afin, Aiphen, Aphu | Opium: the last term is used in late Sanskrit. |
| Affimchi, Afimi, Afimkhor, Afinio, Aphubaz | Excessive, or according to some witnesses, confirmed or habitual, opium-eater. |
| Afimchi-Juari | Opium-eater and gambler. |
| Afin Sahib | An officer of the Opium Department. |
| Ahom | A Mongoloid tribe in East Assam. |
| Ain-i-Akbari | The Institutes of the Emperor Akbar, by Abul Fazl. |
| Akha Tij, Akshay Tij | A Hindu festival. |
| Akra Panch | A local chamber of commerce, in Indore. |
| Arrack | Native spirituous liquor. |
| Amal | Literally, power, effect or action ; hence spell or charm, hence opium. In North and Central India it means opium. |
| Amal-ki-Bhajee | The poppy plant used as vegetable. |
| Amal-Pani | A decoction of opium. |
| Amal Pilana | To present opium to drink at a betrothal. |
| Amiltas | An Indian plant, resembling laburnum in flower. |
| Amin | A surveyor. |
| Amin Kacheri | The surveyor's office. |
| Amir | A ruler or noble of a Muhammedan State. |
| Amlah | Subordinate officials. |
| Amok | A Malay term for a person temporarily deprived of reason, and violent (amuck). |
| Andazi | By guess ; an appraisement. |
| Anna | The sixteenth part of a rupee, nominally = 1½*d.* |
| Aphimi, Aphubaz, or Baja | Opium-eater. *See* Afimi. |
| Asamiwar | Individual dealing, *i.e.*, with the cultivator direct. |
| Attar | Scent. |
| Atisar | Diarrhœa. |
| Atit | A class of Hindoo ascetics or devotees. |
| Ayah | Female attendant on ladies and children. |
| Aiyashi | Debauchery. |
| Ayurveda | The portion of the Hindu scriptures dealing with medicine. |
| Baboo, or Babu | A Bengali term for a clerk or any one in a literary profession. |
| Backsheesh | A present or "tip." |
| Badal | Croup. |
| Badi | Flatulence. |
| Bael | The fruit of the *Ægle marmorea*. |
| Bagri | A caste of merchants in Rajputana. |
| Bahu | Daughter-in-law. |
| Baiba | The title of the wife of a chief. |
| Baids, or Vaids | Medical practitioners on the Ayurvedic or Hindu system. |
| Bairagi | A class of Hindu ascetics. |
| Bajra, or Bajri | Spiked millet (*penicillaria typhoidea*). |
| Balagoli | Opium pills for children. |
| Bamboo Khana | Room for opium-smoking, in Hydrabad. |
| Bandar Coolies | Dock and wharf labourers. |
| Bandhani | A confirmed opium-eater, in Gujarat. |
| Bania | A class of Hindu tradesmen. |
| Bani Lag | A disease caused by drinking bad water. |
| Bandaswar | The lowest grade of menials in the opium service. |
| Banghur | A class of upland as opposed to river valley land, in Behar. |
| Baories | Wells with steps to the water. |
| Barh | A fence or hedge. |
| Bari | A garden for betel vine, &c. |
| Barsh | A medicinal form of opium. |
| Barwatia | An outlaw. |
| Basti | A collection of huts, or a hamlet. |
| Batai | Rent paid by a share in the crop. |
| Begum | The wife of a Muhammedan Chief. |
| Begar | Unskilled labour. |
| Beinchi | The Burmese term for opium pipe-refuse. |
| Beinsa | A confirmed opium-eater (Burma). |
| Beinsi | Clarified opium for smoking. |
| Beri Beri | A contagious fever peculiar to India and the East. |
| Bidi, or Beeree | Native cigarettes. |
| Bigha | A land measure of varying extent. In Behar the opium bigha is equal to five-eighths of an acre. |
| Biswa | The twentieth part of a bigha. |
| Bhadoi | The early, or autumn, crop in Bengal. |
| Bhale Sultan | A high cultivating caste in Oudh. |
| Bhang | A drug prepared from the leaves of the Indian hemp. |
| Bharwad | A pastoral caste in Western India. |
| Bhaoli | Rent paid in kind. |
| Bhat | The bard, or genealogist, amongst the Rajputs. |
| Bheel, or Bhil | A forest tribe of Rajputana and Central India. |

BHIAN - - Opium pounded in water and strained through a cloth.

BHOOM - - A transit duty on opium in Rajputana.

BHUSA - - Chaff.

BHURIE - - A weight = 2½ drachms.

BOHPARI - - A trader.

BOHRA - - In Northern India and Rajputana, a village money-lender. In Western India a class of trading.

BOISHAK - - A month in the Hindu calendar—May.

BUNIA - - *See* BANIA.

CHABENA - - Parched pulse.

CHALAN - - Invoice, or remittance order.

CHAPA - - Literally, a stamp. A fee on packages of opium in Central India.

CHAMAR - - A leather-worker and village menial.

CHANDU - - A preparation of opium for smoking, used by the Chinese.

CHANDUBAZ - - } A confirmed or excessive smoker
CHANDUBDY - - } of chandu.

CHAPRASI - - A belted messenger.

CHARAN - - A caste of bards and genealogists in Western India.

CHARAS - - A preparation of hemp, largely imported into India from Yarkand.

CHATAK, or CHITTACK - } - A weight = oz.

CHATTY - - An earthen vessel for holding liquids.

CHAUDHRI, or CHOWDRY - } - A headman of a trade.

CHAWAL - - A small weight of a few grains.

CHENA, or CHINA - A small millet (panicum miliaceum).

CHEROOTS - - Cigars rolled tobacco.

CHHIKKA - - The capsules of the poppy (Rajputana).

CHICK, or CHIK - Inspissated poppy juice, or crude opium.

CHILLIES - - Capsicum, or pepper-pods.

CHILLUM - - A pipe-bowl.

CHINNAM - - A weight = one-thirtieth of a tola, or six grains.

CHOWKIAT - - Watchmen.

CHOONGI, or CHUNGI Town duties, or Octroi.

CHOWKIDAR - A watchman.

CHUDDER - - The principal garment of women in India.

CHUKTI - - The final adjustment of the opium account with the cultivator.

CHULIA - - Said to be a Bengali name for the people of Cutch.

CHUP RAHO - Be silent.

CHUPRASI - - *See* CHAPRASI.

CHUTKI - - The pinch of opium taken by the weighmen as fee.

CHUTNI - - A condiment.

COLLECTOR - - The chief civil officer of a district, or administrative territorial unit.

COMMISSIONER - The supervising civil officer placed over a group of districts.

CONJI - - Gruel.

COORCHEE, or CURCHI The bark of *Wrightea Antidysenteria*.

CORINGHI - - The people of the north-east coast of Madras, who go to Burma for work.

COTTAH - - *See* KUTHA.

CRORE - - Ten millions, or 100 lakhs.

CUTCH - - A product of the *acacia catechu*. Also a State in Western India.

CUTCHERI - - Office or court-house.

DACOITY - - Gang robbery.

DADNI - - The advance paid on poppy land by Government.

DAFTARDAR - - Record keeper.

DAL - - - Split pulse.

DALAL - - A broker or middleman.

DANIA, or DHANIA - Coriander seeds.

DANE - - Grains—poppy seeds.

DANE-KE-LADDOO - Sweetmeat balls, with poppy seeds in them.

DANE-KE-PAPRI - Flat cakes, with crushed poppy seeds in them.

DAROGHA - - An overseer or inspector.

DARU - - Spirituous liquor.

DEBIA, or DEBUA - A pot.

DEDA GIRASIA - A caste of landholders in Western India, allied to Rajputs.

DEKHAN, or DECCAN The table-land of the peninsula of India.

DEPUTY - COMMISSION. The chief civil officer of a district in the more recently acquired territory.

DEPUTY-COLLECTOR - A civil officer of the Provincial service, placed under the collector of a district.

DESAI - - Literally, colonist. The original settlers of a village community in Western India.

DESHMUKH - - A hereditary revenue officer amongst the Marathas.

DEWAN, or DIWAN - The chief civil official of a Native State.

DHADI, or DHARI - A weight used in Central India= about 10 lbs.

DHADWAI - - A cess on opium sales in Indore city.

DHAMERI - - A class of light irrigated soil in Rajputana.

DHARALA - - Literally, "the arm-bearing class" Gujarat. The term includes the Rajputs and all watchmen, &c.

DHARI - - *See* DHADI, above.

DHAN - - Rice land.

DHARU - - A kind of opium which, according to Hindu medical works, prolongs life.

DHATURA - - Thorn apple (*stramonium*); the seeds are a common poison in India.

DHED - - A village menial class in Gujarat.

DHOBI - - Washermen.

DHOTIE - - Body cloth.

DIH - - - Village.

DISTRICT - - The administrative territorial unit under a collector or deputy commissioner.

DODA, or DODDA - Poppy heads, in Rajputana.

DO FASLI - - Land cropped twice a year; sometimes crops which are in the ground more than one season.

DOHAI, SAHIB! - Justice, Sir!

DOME - - Village scavenging caste in Behar and the North-West Province.

DOOLIE - - A litter.

DURBAR - Either a Native State administration, or a ceremonial State assemblage.

DURBARI - - A person entitled to be invited to Durbar.
DURGA POOJA - A Hindu religious festival, chiefly observed in Bengal.
DUSTICK or DASTAK Abbreviation of Dastkhat, signature or signed document.

FADNAVISHI - - Department of accounts in a Native State.
FAKIR - - A religious mendicant or ascetic, chiefly and correctly amongst the Muhammedans only.
FALKSYAR - - An aphrodisiac compounded of opium and hemp.
FARKHATI - - Deed of release or renunciation.
FASLI - - Season.
FERAZI - - A Muhammedan sect in Eastern Bengal.
FIRINGHI ROG - The "European (Frank) disease" —Syphilis.

GADHRI - - A tribe of shepherds.
GAEKWAR - - The Maratha family ruling at Baroda.
GALWAN - - A decoction of pounded opium.
GAMMAITI - - Village headman in Meywar.
GAM SARAONI - A village funeral celebration.
GANDA - - A weight = 720 grains.
GANJA - - A preparation from the flowers of the hemp.
GANJA-KA-KHET - A field of hemp grown for the flowers.
GARM MASALA - Hot spices.
GARO - - A hill tribe in Western Assam.
GARRYWALLAH - A coachman or driver.
GHAT - - The steps of a landing or bathing stage; also the range of hills along the West Coast, and a hill pass.
GHULMAL - - Riot.
GHEE, or GHI - Clarified butter.
GHOTEE - - A form of opium said to be given to children.
GIRAS - - Formerly a blackmail levied in Western India, now commuted into cash or landed rights.
GIRASSIA - - The holder of Giras, as above.
GIRDAWAR - - Circle inspector.
GODOWN - - A warehouse.
GOIND - - A class of soil in Rajputana.
GOMASHTA - - An agent or representative.
GOL, or GUR - Coarse sugar or molasses.
GOLI - - A pill.
GOOLI, or GULI - A name for madak, a smoking mixture of opium, made into pills, with calcined leaves of acacia.
GOSSAIN - - A class of Hindu ascetics.
GRAM - - A large pulse (*cicer arietinum*).
GRASSIA - - *See* GIRASSIA.
GRUM - - Said to be a system of keeping the crude opium to dry, so as to reduce its weight.
GULI KHOR - A confirmed or excessive madak-smoker.
GUMLA - - An earthenware pot.
GOOR - - *See* GUR.
GOOR VILAS - A work on the Sikh religion.
GUJARATI - - The people of Gujarat, in Western India.
GUJJI - - A mixture of wheat and barley in a field.

GULIVINDA - - A small seed used as a weight in Madras.
GULKAND - - A medicine compounded of poppy flowers.
GUR, GOOR, GUL - Coarse sugar.
GURKHA - - The ruling class of the Nipal State.
GURU - - A spiritual adviser amongst the Hindus.
GURASTHA - - A superior class of soil in Behar.
GUZASHTA - - Lit. past = prescriptive.

HAKIM - - A native physician, practising on the Yunnani, or Arabic, system.
HASIL - - Levy of rent or revenue, in Rajputana.
HAVALDAR - - A corporal or subordinate police officer. In Gujarat a village messenger.
HOLI - - A Hindu festival in the spring.
HOOKAH, or HUKKA A pipe in which the smoke is passed through water.
HOZAI - - A hill tribe in Assam.
HUBBA - - An obsolete measure used in Lucknow medical works.
HUKM - - An order.
HUKM-SE - - By order.
HUNDI - - A bill of exchange.

IJARA - - A farm.
IJARDAR - - The holder of a farm or contract.
ILAKA - - A territorial division of varying extent.
INSI, or INCHI - The ashes of chandu.
IRANI - - Of Iran, or Persia.
ISFANDAR - - A month in the Persian calendar.
ISTAMRARDAR - The holder of land on a special tenure in Ajmer and Central India.

JAGGERY - - Coarse sugar (gur or gul).
JAGIR - - An estate held on military tenure.
JAGIRDAR - The holder of a Jagir.
JAHAZWALLA - A shipowner.
JAIN - - An offshoot of the Hindu religion, resembling Buddhism in some points.
JAMABANDI - - The settlement of the land revenue accounts.
JAMADAR - - A sergeant or police officer. Also the head of a gang of labourers.
JAMMA - - A rentcharge on certain lands in Gujarat.
JARRAN - - A sort of light-coloured opium.
JASUD - - Literally, a spy; but now a village messenger.
JAT - - - A tribe in the Panjab, and along the Jamna river.
JELIA - - A fishing caste in Bengal.
JETH - - Lit. elder; in Behar the representative of the poppy cultivators.
JINRICKSHAW - A Japanese hand-carriage.
JIVATU DOJAKH - "A living hell."
JOLA - - *See* JULAHA.
JUAR - - The large millet (*holcus sorghum*).
JUARI - - A gambler.
JULAHA - - A weaver. In Bengali; Jola.
JUNDBEDASTUR - Castor berry or oil.
JURRI - - Land cropped two years running, in Behar.

KABIRAJ - A physician practising on the Hindu system.
KABULIAT - An agreement.
KACHI (KACHIA) - The market gardener caste.
KACHIN - A hill tribe of Burma.
KACHHA - Raw, unripe, not durable.
KACHHI AFIM - Crude opium.
KAFFA - The rag on which the crude opium is placed to dry.
KAHAR - The fisher and bearer caste.
KAIDI - A prisoner.
KALA AZAR - An epidemic disease peculiar to the Assam Valley (anchylostomiasis).
KALAB - Club (by transliteration).
KALI - A Hindu goddess.
KALIKA DEVI - "The black goddess," a title given to opium in Malwa.
KALAL - The liquor-distilling caste.
KALPA VRIKSHA - The "tree of desire," a beneficent influence.
KAMDAR - Manager, agent.
KANAL - A land measure in Northern India.
KANIA - An opium-eater, in Assam.
KANSARI - A brass worker.
KARBHARI - The chief official of a Native State.
KARKUN - A vernacular writer, in Bombay.
KARTAK - A month in the Hindu calendar—October–November.
KASBATI - The chief landowner of the town or settlement, in parts of Gujarat.
KASTHILA - A late Sanskrit name for the poppy.
KASUM - Safflower.
KASUMBHA - A decoction of opium used in Rajputana and Bombay.
KATHI - A military caste now resident in Kathiawar.
KATHIAWAR - The country of the "Kathi."
KAYASTH - The writing caste of Bengal and North India.
KAZAW HLAWZA - A drink obtained in Burma from rice, maize, &c.
KHAKASA - A Sanskrit name for poppy.
KHAKLA - Barley or wheat straw.
KHALLI - Oil-cake, or pressed poppy seed cake.
KHALSA - Land paying revenue to the Government or Ruler of a State as distinct from land the revenue of which is assigned to private hands.
KHAM - Wine, in Arabic.
KHAN BAHADUR - A title conferred on Muhammedans and Parsis by the British Government.
KHANA - Food.
KHANSAMA - Head servant.
KHAR BHANJAN - Dried fruit taken after opium by Rajputs and others.
KHARCHA - Literally, "expenses." A cess levied by the representatives of the poppy cultivators in Behar.
KHARIF - The crop sown at the beginning of the rainy season.
KHARITA - A formal communication in writing to or from a Native Chief.
KHARWA - A class of sailors and boatmen of the Bombay coast.
KHASGI - Private.
KHASGI MAHALS - The private estate of the chief in a Native State.
KHASTILA - A Sanskrit name for the poppy.
KHATADAR - The representative of the cultivators who wish for licenses for poppy in Behar.
KHATIA - A bedstead.
KHATIK - A butcher.
KHAWAS - A caste in Rajputana and Gujarat.
KHEPIA - A drunkard.
KHEPIA - A porter or runner.
KHICHRI - A dish of rice, pulse, &c.
KHOL - Oilcake.
KHOONT - A transit duty on opium in Rajputana.
KHURCHAN - The scrapings of the opium pots at weighment.
KHUSH MISAJ - A contented disposition.
KIEF - State of elevation, or freedom care or depression, due to opiates or other drugs.
KISMAT - Fate or destiny.
KIST - An instalment of land revenue.
KOERI - A cultivating caste of Behar and the North-West.
KOERAR - Land under market-garden crops.
KOLI - A large tribe in Western India.
KORA AMAL - Dry opium.
KORAI - Pulse.
KOSSID - (Kasid) a runner.
KOTHI or KOTEE - A subdivisional opium office.
KOTHIDAR - The official in charge of a subdivisional opium establishment.
KOTWAL - The official in charge of a police or other post in a town.
KUCKLA - A nut used in compounding some Hindu medicines.
KUNBI - A cultivating caste spread all over North and Central India.
KURMI - The name for the above in Northern India.
KURCHUN - *See* KHURCHAN.
KUTCHA - *See* KACHHA.
KUTHA, or COTTAH - A land measure=the twentieth of a Bigha (151¼ sq. yards).
KUTTORI - A brass vessel.
KYA MAING - The heir to a Burmese chieftainship.

LAGAT - A cess in Rajputana, in commutation of the Chief's right to take *Kasumbha* in a village.
LAKH - One hundred thousand.
LAMBARDAR - The headman of the villagers who take out licenses for poppy cultivation in the North-West
LIKIN - A Chinese transit duty.
LASCAR - An Oriental seaman.
LATHA - The lift for water, for irrigation from a well.
LEGYAM - An aphrodisiac into the composition of which opium enters.
LODHA - A cultivating caste of Northern and Central India.
LOTA - A brass drinking vessel.
LUMBERDAR - *See* LAMBARDAR.

MACHI - *See* MASHA.
MADAK, MADAT, MUDDUCK, MUDDUT - A preparation of opium with calcined leaves of certain plants.
MADAKEE - A person addicted to madak-smoking to excess.
MADANAKAMESHWARI An aphrodisiac of which opium forms a part.

MAGH - A month in the Hindu calendar (January).

MAHAL - An estate, or, in some parts of India, a subdivision of a district.

MAHADEO - A Hindu god.

MAHAJAN - A Hindu banker or merchant.

MAHARAJA, MAHARANA, MAHARAWAL - Titles of Hindu chiefs.

MAHSUL - A customs duty in Native States.

MAHTO - The village headman in Behar.

MAJAR - A class of soil in Rajputana.

MAJUM - A preparation of hemp and poppy seeds.

MAKKAI - Maize or Indian corn.

MAL - Literally, "property." Crude opium.

MAL TOL - The sale of opium to the State by weight.

MALGUZAR - A class of landowner in the Central Provinces.

MALI - A gardener, or the gardening caste.

MAMLATDAR - The revenue officer in charge of a subdivision of a district in Bombay.

MANDARIN - A Chinese official.

MANI - A weight=about 493 lbs.

MANOTI - Security.

MANOTIDAR - A village money lender licensed by the Chief.

MANJ GOT - The "Manj" section of Jat tribe.

MAPA - A transit duty on crude opium in Rajputana and Central India.

MARAN - A name given in Hindu medical works to a class of opium said to be deadly.

MASHA, MACHI, MASSA - A weight=15 grains.

MATSADDI - A writer or accountant.

MATWALLA - A drunkard.

MAUND - A weight=82·28 lbs.

MAURA, MHAURA, MAHUA, MOHWA - The flower of the *Bassia latifolia*, used in distillation of native spirits.

MAUZA - A village, or circle of villages.

MAUZADAR - A village revenue collector in Assam.

MAWA - Dry opium.

MAWAIT - A confirmed or excessive eater of dry opium.

MAZUMDAR, MAJMUDAR - An hereditary district official amongst the Marathas, whose functions are now discontinued.

MEHAL - *See* MAHAL.

MEHTA - A vernacular clerk or writer.

MELA - A Hindu religious fair or gathering.

MOD - Fermented liquor from grain, used in Assam.

MOFUSSIL, or MUFASSAL - The country, as distinguished from the town.

MOHANT - An abbot, or head of a Hindu religious establishment or Mut.

MOHTAT - The usual time for taking a dose of opium.

MOHWA - *See* MAURA.

MOHURRIR - A vernacular writer.

MOJUR (MAZDUR - An unskilled labourer.

MOKASDAR - A hereditary district official in the Deccan.

MOKKA - Indian corn.

MOODI - A village grocer.

MOOKHTAR - *See* MUKHTIAR.

MORA - A certain quality of water for irrigation in Rajputana.

MOTAMID - A representative or agent.

MOUZAH - *See* MAUZA.

MUAFI - Land held revenue free.

MUDDUTKHANA - A shop for sale or consumption of maddat.

MUKADAM - A headman.

MUKLAWA - The bringing of a bride to her husband's house.

MUKHTIAR - An agent, or representative.

MUNG DAL - Split pulse (*phaseolus mungo*).

MUNG PHALI - Pignut.

MUNIM - The manager of a commercial establishment.

MUNSARIM - A superintending official.

MURSHID - A Muhammedan religious teacher.

MUT - An establishment of Hindu devotees.

MYOK - A subdivisional revenue officer in Burma.

MYO-SA - A Shan official.

NAGA - A hill tribe of Assam.

NAIB - Deputy.

NAKDI - Cash rents.

NAKAMMI - Impotent, useless.

NASLAH, NASLI, NAZLAH - Cold in the head.

NAT - The spirits worshipped by the wild tribes of Burma.

NAWAB - A Muhammedan Chief.

NAZIM - A district officer in a Native State.

NAZIR - A supervising officer.

NIKHALIA - A special class of Rajputana opium.

ORIE - A well, in Rajputana.

PADRI LOG - Clergymen.

PAGOL - An idiot.

PAHIKASHT - Cultivators on temporary tenure or from other villages.

PAILA - A weight=14·4 lbs. of opium.

PAILO - A class of soil in Rajputana.

PAKKA - The opposite of "Kachha." Ripe, substantial.

PALKI - A palanquin.

PAN - A hill tribe of Orissa.

PAN - The leaf of the *piper bitel*, chewed with the areca nut (supari).

PANCHAYAT - In Bengal, a village council.

PANCHMI - A Hindu festival.

PANCHSERI - A weight of about 10 pounds.

PANSARI or PANSERI - A druggist.

PANI - Water.

PANNI - Poppy leaves.

PARGANAH - A subdivision of a district.

PARWANA - A permit or license.

PASEWA - The liquid that escapes from the crude opium while drying.

PATEL - A village headman in Western India.

PATHAL - Poppy leaves.

PATIDAR - Literally, "sharer." One of the families that founded the village.

PATWARI - - The village accountant.
PERGUNNAH - - *See* PARGANAH.
PERWANA - - *See* PARWANA.
PETA BHAGIA - A subordinate sharer in an estate.
PHIKA - - A particular class of water used for irrigation in Rajputana.
PHERA - - Part of the Hindu marriage rite.
PIADA - - A runner or messenger.
PICE - - The fourth part of an anna, = the sixty-fourth of a rupee.
PICUL - - A Chinese weight = about 133 lbs.
PIE - - - The twelfth part of an anna = the 192nd part of a rupee.
PINA and LAGANA - To drink and to apply as fomentation or lotion.
POONADY - - An aphrodisiac of which opium is an ingredient.
POOJA - - Hindu worship.
POST - - The liquor resulting from the infusion of the capsules of the poppy in water.
POSTI - - A person given to over-indulgence in *post*.
PRANT - - A division of a State.
PUCCA - - *See* PAKKA.
PUGREE - - A head cloth or turban.
PUNCHAYAT - - *See* PANCHAYAT.
PUNDIT - - A common title of a learned Brahman throughout India. Occasionally it means a teacher of Indian languages.
PUTTA - - A lease or agreement.
PUTWA - - *See* PATWARI.
PWE - - A Burmese ballet, or dramatic dance.

QIRAT - - An obsolete weight mentioned in Lucknow works on the Arabic medical system.

RABI - - The crop sown in the late autumn.
RAFA-I-AM - - "The public improvement." The title of several associations in India.
RAJ - - - The State. Sometimes the administration.
RAJA - - A Hindu chief.
RAJPUT - - The highest lay caste of the Hindus.
RAS - - - Juice.
RASSAD - - Supplies on a journey.
RATTI - - A weight = 2 grains.
REGAR - - A cultivating and labouring caste in Rajputana.
RICKSHAW - - Abbreviation of Jinrickshaw.
RUBAKAR - - Vernacular correspondence.
RUBBA - - Opium of an inferior quality.
RUPEE - - A silver coin now worth about 1*s.* 1½*d.*

SADAR - - }
SUDDER - - } The headquarters of a district.
SADR - - }
SAHIB - - Sir. It is often used to denominate Europeans generally.
SAHUKAR - - } A money lender.
SOWKAR - - }
SAKTI - - Lit. strength. The female principle or force in Nature. A Hindu goddess.
SALONE - - A tribe of sea gipsies off Tenasserim.
SANGRAHHANI - Painless diarrhœa.
SANNAD - - A deed, grant.
SARAN - - A class of opium which, according to the Hindu medical authorities, causes diarrhœa.
SARAONI - - A funeral celebration of a public nature.
SARDI - - Cold.
SARWAJANIK SABHA A popular assembly. The name of several associations in India.
SATTUA, or SATTU - Pulse meal.
SAWBWA - - A chieftain of outlying States in Burma.
SAWAT - - A disease.
SAYER - - A customs duty levied in Native States.
SER - - - A standard weight = 2·057 lbs.
SETH, or SHETH, or SAH - - } The honorific title of a Hindu merchant.
SHAITANI - - Devilish.
SHAN - - A race inhabiting parts of Burma and the surrounding States.
SHASTRA - - The Hindu scriptures.
SHERISTADAR - A head vernacular clerk.
SHIA - - One of the two great sects of Muhammedans.
SHIKAME - - A class of poor irrigated land in Behar.
SHIVA - - One of the Hindu gods.
SHIRA - - Broth, also treacle.
SHREE, or SHRI - An invocation used at the head of a letter by Hindus.
SHUMSHOO - - Chinese spirituous liquor.
SIKH - - A religion detached from the Hindu, in the Panjab.
SIRDAR - - - A noble.
SIRKAR, or SIRCAR - The Government.
SIR SUBHA - - A high revenue official in Native States.
SIVERAT - - A Hindu festival.
SOWAR - - A trooper or mounted policeman.
SOWKAR - - *See* SAHUKAR.
SUNNI - - One of the two great sects of the Muhammedans.
SUPARI - - The areca nut, sliced and chewed with "pan."
SUTTEE (SATI) The immolation of widows on the pyre of their deceased husband.
STHANIK NIBANDH - A State law in Baroda.
SWAMI NARAYAN - A sect of Hindus, chiefly found in Gujarat.

TAEL - - A Chinese silver weight = 1⅓ oz.
TAHSIL - - A subdivision of a district.
TAHSILDAR - - The officer in charge of a Tahsil.
TAKIA - - The shrine of a Muhammedan saint or ascetic.
TALUK - - A subdivision of a district, or an estate comprising a number of villages.
TALUKDAR - - The owner of a Taluk, or large estate.
TALUKDARI - - The tenure of a Talukdars' estate.
TALOD - - A local cess on opium in a State of Rajputana.
TAMIL - - The race and language of the population of the extreme south of India.
TARAI, or TERAI - A belt of marshy forest adjoining the Himalaya.
TARA HURA - Pills of opium in Rajputana.
TARI, or TADI—TODDY - - } The juice of the palm tree.

| | |
|---|---|
| Tazimi Sirdar | A noble who has what corresponds to the "private entrée" at the Court of his chief. |
| Tejara | A cold infusion of poppy heads. |
| Terai | *See* Tarai. |
| Thakur | A Rajput Chieftain. |
| Thana | A police station. |
| Thandar | The officer in charge of a thana or station. |
| Thali | Brass platter. |
| Thathameda | A poll tax in Upper Burma. |
| Thekana | Tributary chieftains under the Jeypore State. |
| Thekadar, or Ticadar | Farmer or contractor. |
| Thugyi | A revenue collector in Burma. |
| Ticadar | *See* Thekadar. |
| Tical | The Burmese term for "tola," or 180 grains weight. |
| Tika Sahib | Son and heir to a chief. |
| Tilak | The caste mark affixed to the forehead by Hindus. |
| Tilbheda | Sanskrit for poppy. |
| Tipdar | Middlemen in Central India. |
| Tola | A standard weight of 180 grains. |
| Tonga | A small carriage on two wheels. |
| Tulai | Weighment (of opium)=Wazan Kashi. |
| Tullawati | Ditto (ditto). |
| Tulsi | The Basil plant. |
| Triyak | A universal remedy in Hindu medicine. |
| Urdu | The Court or Camp language of the Delhi Emperors, consisting of Hindi largely mixed with Persian. |
| "Up Country" | Used of the interior or north of India by residents of the coast tracts. |
| Udak | A grant of rent-free land in charity. |
| Vaid, or Baid | A medical practitioner on the Ayurvedic or Hindu system. |
| Vaidya | |
| Vakil | A representative, but usually taken to mean a pleader. |
| Val, or Wal | A small seed used as a weight in Bombay. |
| Vanmamagis | A class of ministrants to a shrine in Gujarat. (*Apparently a misprint*). |
| Vasua | A local cess in Rajputana. |
| Vasava | Village watchmen in Gujarat. |
| Vedantism | A school of Hindu metaphysics. |
| Viga | =Bigha. |
| Vilayati Daru | European spirits. |
| Vishamajwar | Remittent fever. |
| Viss | A weight in Burma=3·68 lbs. |
| Vazir | The minister to a chief. |
| Vrat | Hindu fasts. |
| Wasika | State funds in Oudh, set apart for pensions assigned by the late Nawab. |
| Wazan Kashi | A tax on opium by weight in Central India. |
| Wun | A chief minister of the late court of Ava. |
| Yad Dasht | A memorandum. |
| Yek Fasli | A crop that is sown and reaped in the same year. Sometimes land cropped only once a year. |
| Yunani | Ionian. The Arabic system of medicine. |
| Zabti, or Zapti | Cash rates used for special crops in territories where ordinary crops pay in kind. |
| Zaildar | Headman over a circle of villages. |
| Zakat | Customs duty. |
| Zarda | A coarse sort of tobacco. |
| Zemindar | Landowner. |
| Zenana | The women's apartments in a house. |
| Zilla | A district. In Behar, the subdivision under a subordinate official of the Opium Department. |
| Zilladar | The official in charge of an opium zilla. |
| Zira | Cumin seed. |
| Ziyadah | Excess. |

# APPENDIX H.*

Osgathorpe Hills, Sheffield,
December 5th, 1894.

DEAR LORD BRASSEY,

I am sorry that it should be needful for me to complain in reference to certain matters connected with the Commission.

I. I am informed by Mr. Baines that no minutes of the proceedings of the Commission have been kept, or, at any rate, are now available. This, I understand, is entirely contrary to the usual practice.

II. It appears to me that our Indian colleagues have not been treated with the consideration to which they were entitled in reference to their coming to this country for the purpose of taking part in our deliberations on the Report. As regards the Maharaja of Darbhanga, it was, I am aware, generally understood that he was not willing to undertake the journey, but that general understanding was no reason why he should not have been formally and courteously invited. The case of Mr. Haridas is different. He appeared to be desirous of coming; and had he been formally and courteously invited at the proper time, before he had resumed his duties as Dewan of Junagarh, there is every reason to believe that he would have been glad to accept the invitation; in fact, he distinctly stated that your Lordship told him you would inform him in June as to whether his presence would be required in England, and had he been so then informed he would doubtless have been able to avoid taking up his new appointment in August last.

III. It appears that when at last, in consequence of my representations, Mr. Haridas was invited to come to this country, the communication was not sent direct to him, but through the India Office, and then successively through the Government of India and the Government of Bombay. This was, I submit, a departure from the usual practice of Royal Commissions, and distinctly derogatory to the position of such a Commission and of a Royal Commissioner. Mr. Haridas has thus been treated as though he were merely an official under the Indian Government, to be communicated with through the usual system of official routine.

IV. It appears further that our Indian colleagues have not been promptly furnished with the sections of the Draft Report. Four parts were received by me up to the 2nd of August, and might have been in their hands in the third week of the month, whereas Mr. Haridas, when he wrote on the 9th October, had not received any part.

V. The Secretary of the Commission sent for my perusal a letter from Mr. Fanshawe addressed to the Chairman, proposing that the correspondence between the Indian Government, the Commission, and myself in reference to the action of the authorities should be published in the Appendix. I returned to the Secretary the letter of Mr. Fanshawe, saying that I did not object to such publication, but that the last letter of the series, namely, that dated the 3rd February 1894, should have a note appended to it indicating that it had not been communicated to me for three months after the date it bore. My request has not been complied with, and our Secretary informs me that it was ignored by him on his own responsibility. I submit that in so acting he exceeded the limits of his authority.

I have to request that you will be so good as to place this letter before the Commission at a suitable but early part of the meeting on the 7th instant.

I remain,
Dear Lord Brassey,
Yours faithfully,

The Right Honourable Lord Brassey, K.C.B. HENRY J. WILSON.

* This correspondence is added to the proceedings in compliance with the Chairman's undertaking expressed in the last paragraph of his letter of the 10th December, *see* next page.

Normanhurst Court, Battle,
10th December 1894.

My dear Wilson,

I much regret that your letter of December 5th, but which bears on the envelope the London postmark of December 7th, did not reach me in time for discussion at the last meeting of the Commission. As to the keeping of minutes, there had been no meetings of the Commission since we separated at Bombay. A shorthand writer has been present at every meeting, and his notes have been printed. As regards the invitations to our Indian colleagues, I did not think it desirable to invite them to England until the Report was ready for discussion. You know the delays, and the causes of the delay. As soon as I knew the approximate date when we should be ready for a conference, I informed the India Office. I cannot think that our Indian colleagues would themselves take exception to the mode in which they have been treated. Nothing could have been more cordial than our relations in India from the beginning to the end. I endeavoured to show them in every way the same friendly regard and the same deference to any suggestions or opinions which they advanced, which I have always desired to show to my English colleagues.

I will forward your letter to Mr. Fanshawe and Mr. Baines for any explanations. The correspondence can be published with the minutes of our proceedings.

Yours sincerely,
BRASSEY.

*Forwarded to Mr. Fanshawe* with Mr. Wilson's letter, in compliance with the Chairman's concluding paragraph.

J. A. Baines,
14th December 1894. Secretary.

*Endorsement by Mr. Fanshawe :—*

I have read and now return this correspondence, which I cannot help thinking has been sent to me under some misapprehension. There is nothing, so far as I can see, in Mr. Wilson's letter of the 5th instant on which I am called upon to offer any remarks.

14th December 1894. A. U. Fanshawe.

*Endorsement by the Secretary :—*

As regards the last paragraph of Mr. Wilson's letter, I have to explain that, in a note received from him dated the 24th of July, he wrote—"If you are going to have the "correspondence in question put in type, I think there ought to be an endorsement to "the effect that Mr. Hewett's letter to the Government of India, Camp Ajmere, "3rd February 1894, was not communicated to me until the 1st of May 1894—three "months after date. I shall, of course, have something to say on the whole subject "hereafter."

Mr. Wilson did not inform me that he was kept in ignorance of the fact that such a reply had been sent or of the purport of its contents. The records are the common property of the Commission, accessible to every member. It is neither usual nor necessary, therefore, to formally communicate correspondence to individual members, who have the official copy available for reference. Mr. Wilson was present with the Commission up to the 20th February, and to have added a note to the effect he suggested involves the implication that he was debarred from access to the records and from due knowledge of what action his colleagues had taken in a matter in which he was materially interested. In omitting the endorsement, therefore, I considered it superfluous to refer to the Chairman. The only member of the Commission to whom I informally showed the proposal agreed with my view as to the misapprehension to which such a note would give rise.

J. A. Baines,
Secretary.

*Further endorsement :—*

This correspondence was placed by the Secretary for disposal at the meetings of the 23rd, 24th, and 25th January, but other work blocked the way.

J. A. Baines.

# ERRATA.*

Vol. I., page v, paragraph 6, for "hear" read "bear."
„ „ 40, question "606" should be "506."
„ „ 173, second column, line 3, for "opium" read "opinion."
„ „ 174, „ „ „ 56, for "open" read "opium."
„ pp. 61–80, the date should be the 14th September.

Vol. II. page 28, question 2362, line 2, for "dues" read "does."
„ „ „ „ 2423, „ 13, for "Tso-Tsung-Tung" read "Chang-Chih-Tung."
„ „ 37. „ 2587, „ 1, for "2586" read "2587."
„ „ 65, „ 3196, „ 23, for "royts" read "ryots."
„ „ 89, „ 3869, „ 9, for "dietectic" read "dietetic."
„ „ 100, „ 4281, „ 1, for "4881" read "4281."
„ „ 113, „ 4624, „ 3, for "raken" read "taken."
„ „ 137, „ 5218, „ 3, for "Matarial" read "Malarial."
„ „ 138, „ 5250, „ 13, for "Port" read "Report."
„ „ 140, „ 5274, „ 5, for "Cast" read "Caste."
„ „ „ „ 5280, „ 21, for "Junlge" read "Jungle."
„ „ 156, „ 5680, „ 2, for "Euraian" read "Eurasian."
„ „ 167, „ 5987, „ 1, to "observation" add "on."
„ „ 177, „ 6353, „ 1, for "eading" read "heading."
„ „ 183, „ 6582, „ 2, for "1880 or 1881" read "1890 or 1891."
„ „ 202, „ 7142, Mr. Sit Hon's evidence begins with this question.
„ „ 203, „ 7202, line 2, for "opuim" read "opium."
„ „ 234, „ 8181, „ 2, for "Henazda" read "Henzada."
„ „ 247, „ 8556, „ 1, for "Engal" read "Bengal."
„ „ 252, „ 8754, Add "I" at end of answer.
„ „ 294, „ 10,143, line 5, for "depredation" read "deprivation."
„ „ 563, 2nd column, line 5, for "Hade" read "have."
„ „ 577, „ „ „ 55, for "Aloft" read "Aloof."
„ „ 617, „ „ „ 45, for "not a rule are" read "not smoke as a rule: they are."
„ „ 630, 1st column, „ 10 from bottom, after "Task is" add "such."
„ „ 641, 1st column, paragraph 20, line 13, for "packing" read "package."
„ „ 663, paragraph 70, line 4, for "1887" read "1878."

Vol. III., page 5, question 10,841, line 3, for "Secretary" read "Society."
„ „ 10, column 2, line 12, for "Committee" read "Commission."
„ „ 61, question 12,493, „ 7, for "Gangreen" read "Gangrene."
„ „ 74 „ 12,899, „ 1, for "19,899" read "12,899."
„ „ 80, „ 13,114, „ 4, for "Point" read "Joint."
„ „ 107, „ 14,004, „ 4, for "holher" read "holder."
„ „ 110, „ 14,075, „ 1, for "14,975" read "14,075."
„ „ 115, „ 14,266, „ 2, for "into" read "unto."
„ „ 145, „ 15,336, „ 1, for "1533" read "15,336.
„ „ 151, „ 15,580, „ 2, for "Native" read "National."
„ „ 178, „ 16,460, „ 4, for "No" read "Not."
„ „ 195, „ 17,008, „ 2, for "Tak" read "Take."
„ „ 238, „ 18,522, „ 11, for "slighest" read "slightest."
„ „ 274, „ 19,481, „ 2, for "35" read "25."
„ „ „ „ „ 2, for "25" read "35."

Vol. IV., „ 11, „ 20,286, „ 6, for "sexal" read "sexual."
„ „ 38, „ 24,845, „ 5, for "Seltlement" read "Settlement."
„ „ 62, „ 20,345, „ 1, for "22,845" read "20,345."
„ „ „ „ 20,346, „ 1, for "22,346" read "20,346."
„ „ 81, „ 21,760, „ 4, for "men" read "women."
„ „ 91, „ 21,877, „ 4, after "20 or 30" add "per cent."
„ „ 92, „ 21,923, „ 1, for "22,923" read "21,923."
„ „ „ „ 21,932, „ 1, for "71,923" read "21,932."
„ „ 95, „ 22,009, „ 1, for "12,009" read "22,009."
„ „ 105, „ 22,211, „ 1, for "22,111" read "22,211."
„ „ 112, „ 22,310, „ —for "035,000,000" read "135,000,000."
„ „ 193, „ 24,206, „ 8, for "slugssh" read "sluggish."
„ „ 209, „ 24,625, „ 1, for "25,625" read "24,625."
„ „ 250, „ 25,497, „ 5, for "quests" read "guests."
„ „ 257, „ 25,600, „ 20, for "opium" read "opinion."
„ „ 264, „ 25,809, „ 5, for "dysentary" read "dysentery."
„ „ 283, „ 26,154, „ 5, for "10 tola" read "2 tola."
„ „ 299, „ 26,532, „ for "·3" (of a tola) read "·03."
„ „ 324, „ 27,037, „ 6, before "impolitic" enter "and."

* In the circumstances in which the evidence and proceedings were printed in India numerous typographical errors necessarily occurred. This list contains most of those which have come to light since the publication of the proceedings, in the course of reviewing the evidence for the purpose of drafting the report. There are doubtless many which have escaped notice.

Vol. IV., page 342, question 27,511, line 1, for "Columbo" read "Colombo."
" " 352, " 27,788, " 4, for "Indian" read "India."
" " 365, " 28,057, " 1, for "Fatuer" read "Father."
" " " " 28,061, " 1, for "26,061" read "28,061."
" " 369, " 28,163, " 1, for "21,163" read "28,163."
" " " " 28,164, " 1, for "21,164" read "28,164."
" " 376½ line 3, for "operations" read "opinions."
" " 386–87, the first set of questions should be omitted.
" " 398, 2nd column, line 26, for "consumption read "compensation."
" " 501, par. 15, line 4, for "side" read "sale."
" " 522, In the Table (App. F.), the population of Chanda should be 697,610, and the total for the Province 10,046,546.
" " 296, question 26,437, at end of question add the following:—

*For Fever.*—The Tanna District is considered very malarious because the chief crop is rice. I have made diligent inquiries from the villagers ever since I heard the surprising statement that opium was considered as a preventative and cure for fever. I have never met one Native who ever hinted that it might be good for fever, and when questioned as to whether they ever used opium for fever, the answer invariably was "No." I have made inquiries of the Free Church dispensary at Tanna. During 1893, 12,615 patients (aggregating 36,436 visits) were treated; of these over half were suffering from fever. The doctor uses opium as a drug, *but never for fever.* When asked if during his 14 years of medical practice in this district he ever heard of Native using opium for fever, he said he never had."

Vol. V., page 120, 2nd column, line 41, for "some" read "none."
" " 212, Interrogatories sent to China:—
Question 6, add "If you know any or many cases of great injury give examples."
" 13, omit the words "Do they usually or often take it in the first instance to allay physical pain?"
" 15, the question should be "Is there among the Chinese in the part of China with which you are acquainted any wish that England should not allow opium to be exported from India."

Vol. V., page 372, First column, twelfth line from bottom, after Calcutta, a comma should take the place of the full stop.
" " " Second column, omit the last line of the page.
" " 373, second column, third line from bottom, for "*Cannibas*" read "*Cannabis.*"
" " 375, first column, seventh line, for "*January*" read "*December.*"

# SUPPLEMENT

TO THE

# REPORT

OF THE

# ROYAL COMMISSION ON OPIUM.

NOTE BY

THE HON. THE MAHARAJA BAHADUR OF DURBHANGA, K.C.I.E.

Presented to both Houses of Parliament by Command of Her Majesty.

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1895.

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# Supplement to the Report of the Royal Commission on Opium.

## NOTE BY THE HON. THE MAHARAJA BAHADUR OF DURBHANGA, K.C.I.E.

I have carefully considered the different sections of the draft Report which have been submitted to me. I note that the Report is, on the whole, drawn up in accordance with the spirit of the resolutions that were passed at the last sitting of the Commission in Bombay, and as such, I am prepared to accord a general support to it.

2. But there are certain points to which I desire more particularly to invite the attention of the British public: and I have therefore, determined to embody them in the form of a separate Note, in which I shall at the same time suggest such alterations and additions in the Report as may, in my opinion, be advisable.

3. It will be my endeavour, in the remarks which I have to offer, to express, as faithfully as it lies in my power to do, the views entertained on the opium question by the majority of the Indian thinking public. I do not, however, conceal from myself that a certain section of the community hold widely different opinions. In the view of some, opium, when used non-medicinally, is little better than a poison, whose only effect is to degrade humanity. On the other hand, there are those who hold that the properties of opium as a drug are highly beneficial, and that its action as a "brightener "of the intellect" is not one of the least of its claims to favourable consideration. The opinions of the former class are not without their value, and are entitled to every respect; but I regret to be unable to admit that they are borne out by the testimony which has been produced on their behalf in the course of the sittings of the Commission.

The export of Indian opium to China.

4. With regard to the export of Indian opium to China, one of the questions we were called upon to discuss, the policy of Her Majesty's Government has been very clearly defined by Sir James Fergusson, when Under-Secretary for Foreign Affairs, in a speech delivered by him in the House of Commons on the 10th April 1891:—"If "the Chinese Government," he said, "thought proper to raise the duty to a prohibi-"tive extent, they ought to shut out the article altogether, for this country would "not spend one pound on powder and shot or lose the life of a single soldier in an "attempt to force opium upon the Chinese." I desire to record my entire sympathy with these sentiments, and I am confident that the Government have no intention of resiling from the attitude then taken up. It cannot be too clearly enunciated that, if the trade in opium between India and China is to be discouraged and suppressed, the initiative must be taken by the Chinese. No one can be better aware than the Chinese Government of the uses and abuses to which opium is put by their subjects. I am at a loss to understand how it can possibly be contended that foreign Governments, such as those of England and India, are more favourably situated for the discussion of such matters, or in what way they are more competent judges than the people and the Government which are most directly interested in the question.

5. It would, in my opinion, be a highly impolitic act on the part of the Government of India to put an end of its own accord to the traffic in opium with China. We possess no guarantee whatever that any such suppression of the trade on our part would in any way diminish the use of the drug in China. Nor have we at present any data to show that such an act of well-meant, but, as it appears to me, wholly mistaken, philanthropy would bring with it the abolition of poppy cultivation in China, or the discouragement of the opium trade between China and countries such as Turkey and Persia.

6. I would also call attention to the financial aspect of the question. Any such suppression of the opium trade in India with China must entail the sacrifice of a large source of revenue without any corresponding benefit to humanity at large or compensation to the Indian taxpayer. The present financial position of the country is not such as to justify any such philanthropic experiments, and I consider it my duty to point out that any action of the nature I have indicated is likely to create grave and serious discontent in this country, where the people have no voice in regulating

the expenditure and where the annual expenditure has enormously increased during the past ten years. The utmost taxable limit has been reached and the fresh and heavy taxation, which would be rendered necessary by the withdrawal of the opium revenue, would be very seriously felt in an impoverished country such as India.

The use of opium in India.

7. A great many medical witnesses were examined. Their evidence as regards the uses and the abuses of opium was conflicting. But I do not wish to enter into the subject. I consider it presumptuous on my part to do so, as the question has been so ably dealt with by Sir William Roberts in his Minute. I would only state here that it has not, in my opinion, been proved that opium is an unmixed evil. I have, however, a suggestion to offer in this connexion. In Burma, certain restrictions have been put on the sale of opium by the Local Government. And I think that in other parts of India also the Local Governments, as well as local bodies like the District Boards, should be empowered to frame rules for the sale of opium according to the circumstances of the different localities. It is impossible to make any suggestions that can apply to the whole of India, and I hesitate therefore to lay down any hard-and-fast rule upon the point. I would, however, urge that opium should be sold in bottles or phials labelled "poison", and the minimum dose which is likely to be fatal should also be legibly printed in the vernacular on these labels. In some parts of the country it is a common practice for mothers to give small doses of opium to young children. I do not wish to express any opinion as to whether this practice of giving opium to young infants is at all necessary for the benefit of the children. I will content myself with pointing out the fact that opium is, unlike alcohol, a deadly poison if taken in excess, and is a dangerous weapon in the hands of ignorant persons. A witness at Lucknow gave evidence to the effect that an infant brother of his was killed by an accidental over-dose of opium administered by his own mother. My suggestion to label phials or bottles in which opium is sold, would be of assistance in reducing the chances of such accidents to a minimum.

8. The habit of opium-smoking is generally looked upon as a degrading habit. Mr. Haridas Veharidas has entered into the subject very fully; and as I find myself in agreement with his views on the subject, I do not propose to discuss the point at any length. Opium, however, is chiefly used as a mild and harmless stimulant. The habit of opium-eating, unlike that of opium-smoking, is not necessarily looked down upon as a degrading habit. It is largely practised in Rajputana on festive occasions as a token of welcome to guests and friends. When two enemies wish to end a long-standing feud, they generally go through the following ceremony:—They each drink a small quantity of the preparation of opium called "Amulpani" from the hands of the other; and this is recognised as making the ties of friendship inviolable. In certain localities, opium is consumed at funerals, marriages, betrothals, and other ceremonies. Among the Kathis of Kathiawar it would be considered an offence if the guest refused to take opium on occasions like these. In the Punjab, a large proportion of the adult male population take opium in small doses as a stimulant without much or any apparent harm. It is looked upon as a digestive and a very beneficial tonic for a man who has reached middle age.

9. To stop the use of opium in cases like these would be not only an unnecessary restriction on the freedom of the subject, but it might, and, I think, would, lead also to the increased consumption of alcohol. This fear was expressed by a great number of witnesses. The use of a stimulant should only be interfered with if it is proved that it leads to a general depravity in the moral character or to any marked physical deterioration of a community. Speaking generally of the whole of India, it does not appear to me that these essential conditions have been proved.

Poppy cultivation in Native States.

10. The evidence given on behalf of those Native States in which opium is grown, shows that there is a very strong feeling against any interference with the cultivation of the poppy; and I consider that it would be highly injudicious to adopt any restrictive measures in face of such strong and influential opposition. I here take the opportunity to make a few quotations from a "*Kharita*" addressed to the members of the Royal Opium Commission by H. H. the Maharaja Holkar, dated the 6th February 1894:—

> "(1.) In view of the relations existing between the Paramount Power and my "State, the former would not be justified in requiring me to prohibit the cultiva- "tion of opium in my State, except for medical purposes, even though it may itself "enforce such prohibition in British India.

"(2.) No money compensation can properly or adequately compensate the "State or the various classes affected by it for the losses which they will sustain.

"(3.) The prohibition will be oppressive to my subjects.

"(4.) As a rule, the consumption of opium in my State is moderate, and a "moderate use of opium is not prejudicial in any way.

"(5.) I have always found my subjects peaceful and law-abiding, and I "apprehend that interference with the present state of things will make (them) "discontented."

11. These are the views of one of the most enlightened native princes of India, who has besides the reputation of being one of the ablest revenue administrators that Malwa has ever produced. His views, moreover, were endorsed by nearly all the representatives of the States of Central India. This feeling against any interference with the opium trade is a very natural one. The suppression of the opium trade would seriously interfere with the financial equilibrium of many of the Native States; and it is impossible to foresee the consequences of such a step. The discontent and the dissatisfaction will be none the less a source of political danger, although they may not find open expression.

12. In this connexion, I wish to quote the answer given by Rao Bahadur K. C. Bedarkar the Prime Minister of the Indore State, to a question whether he considered it would be expedient (if it were rightful to do so) to bring the powers of the Paramount State into action in relation to this question of the poppy:—

22,202. *A.*—"My answer to this question is in the negative, and for the "following reasons:—

"(1.) The State would suffer a loss of about Rs. 21,000,000 annually, and would "gain no benefit for a sum of Rs. 33,000,000 sunk in wells and tanks.

"(2.) The agriculturists would suffer a loss of Rs. 18,56,190 annually, and "would get no proportionate return for a sum of 3 lakhs of rupees sunk by them "in wells within the last few years, and of other large sums spent by them in "previous years.

"(3.) The jagirdars would suffer to the extent of Rs. 1,63,500 annually.

"(4.) The traders would suffer a loss estimated at Rs. 8,50,000 annually, and "would find no good investment for nearly a crore and a half of rupees now "invested in the opium trade.

"(5.) No money compensation can adequately make up the loss, and it is "impracticable to apportion such compensation.

"(6.) The impracticability of carrying out preventive measures.

"(7.) There would be a resort to liquor, leading to physical deterioration, "moral and social degradation, breach of religious commandment, and increase "of crime.

"(8.) There would be grave discontent amongst the people, amounting to "political danger.

"(9.) No object shall be gained by making so much sacrifice and incurring so "much risk, as China will continue to grow and consume its own inferior opium, "in spite of all and everything."

The Bengal monopoly system.

13. I now come to the consideration of the Bengal Monopoly System. I am a staunch advocate of free trade principles, but as far as India is concerned, I am convinced that a Government monopoly like that of opium is one of the most popular and least oppressive systems of raising revenue. The unpopularity in India, of direct taxes such as the Income tax and the License tax, and the difficulty in making proper assessments are well known. I should be sorry to see this source of revenue replaced by any system of direct taxation which is likely to place the people at the mercy of a notoriously corrupt and ill-paid class of rural assessors.

14. There are two systems of opium cultivation practised in Bengal. Firstly, the Benares system of dealing directly with the ryots; secondly, the Patna or Behar system of dealing through middlemen. One thing is common to both of these systems, *i.e.*, advances are given to the ryots, and they are bound down by a written agreement to cultivate a certain area of land. This, in most cases, is a distinct advantage to the ryots, inasmuch as they get these advances without having to pay any interest.

15. I consider it, however, my duty to point out that the prices paid for opium up till last year had not varied for more than 20 years. During this period the country

has been opened up by a number of railways, and the cost of labour and food has increased enormously. In the course of the sittings of the Commission at Bankipur, it was brought to our notice that ryots, who had entered into agreements to cultivate the poppy, had in some cases failed to carry out the contract on account of the lowness of the price, and it was alleged that they had been compelled by the Opium Department to uproot the crops they had sown in the place of the poppy. On this question of price the evidence of Mr. A Forbes, the Commissioner of the Patna Division, was as follows:—

*Q.* 10,797.—"I presume, you think the people would view with regret the "enforcement of a policy of prohibition of the further cultivation of the poppy? "*A.*—Very much so. I consider that it would ruin thousands of them. I think, "myself, that the proper policy of Government would be to raise the Government "price of the poppy. I have very little doubt, if the Government price of opium "were raised from Rs. 6 a seer to Rs. 5·8 or certainly to Rs. 6, that it would "compete much more equally with the other crops which have risen with the fall "in the value of the rupee, which the Government price of poppy has not done."

16. It will be seen that Mr. Forbes is strongly in favour of raising the price of the poppy, and his opinion derives great weight from the fact of his having served on a Commission appointed by the Government of India about 13 years ago to inquire into the working of the Opium Department in Bengal and the North-West Provinces. Similar evidence is given by other witnesses like Babu Guru Prasad Sen, the Secretary of the Behar Landowner's Association, and Babu Saligram Singh, who is an influential landowner in that province, gave evidence to the effect that on account of the opening of new markets the opium cultivation is less profitable to the farmers than that of various other crops. In connexion with this subject, it should be pointed out that the Benares system of direct dealing with the ryots is very much more popular with landlords and tenants alike than the Behar system of dealing through middlemen or zillahdars. This latter system is considered by many to lead to much unnecessary oppression; and I would therefore propose the gradual introduction of the Benares system to Behar also.

17. In conclusion, I desire to record my appreciation of the courtesy and consideration shown to me during the sittings of the Commission in India by Lord Brassey and my colleagues. I was unfortunately prevented by ill-health from being present throughout the inquiry, and the delay in submitting this Note, which I much regret, must, I fear, be attributed to the same unavoidable cause.

LAKSHMESHWAR SINGH OF DARBHANGA.

Received on the 6th May 1895.

J. A. Baines,
Secretary to the Commission.

# REPORT

OF THE

# COMMITTEE

APPOINTED BY THE

# PRESIDENT OF THE BOARD OF TRADE

ON THE

# SCREENING OF SHIPS' SIDE LIGHTS,

WITH

## MINUTES OF EVIDENCE AND APPENDICES.

## I.—REPORT.

**Presented to both Houses of Parliament by Command of Her Majesty.**

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1895.

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# MINUTE OF APPOINTMENT.

At the Council Chamber, Whitehall,

This 18th day of March, 1895.

Present :

The Right Hon. James Bryce, M.P.

The Board of Trade are pleased to appoint the following gentlemen, viz. :—

The Right Hon. Sir Francis H. Jeune,
Sir Edward J. Harland, Bart., M.P.,
Sir Francis H. Evans, K.C.M.G., M.P.,
Rear-Admiral H. G. Andoe, C.B.,
Captain H. F. Hughes Hallett, R.N.,
Mr. Thomas Henry Ismay,
Mr. Thomas Scrutton,
Mr. Wilson Barker,
Mr. James Bolam,
Mr. John S. Castle,
Mr. Anthony S. Thomson,

to be a Committee to consider and report—

1. Whether the rule laid down in the Order in Council of January 30th, 1893, is in accord with, and calculated to secure compliance with, the requirements of Articles 3 and 15 of the International Regulations for Preventing Collisions at Sea, as to the fixing and screening of the side-lights of vessels.

2. Whether it is desirable in the interests of safety, and in order to secure due compliance with the above-named Articles, that any, and what, alterations should be made in the Instructions issued by the Board of Trade to their surveyors in the matter.

The Board of Trade are also pleased to appoint Mr. C. Hipwood to be Secretary to the Committee.

(Signed) JAMES BRYCE.

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(Signed) JAMES BRYCE.

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1 89730. Wt. 27353.

# REPORT.

TO THE RIGHT HONOURABLE THE PRESIDENT OF THE BOARD OF TRADE.

SIR, November 13th, 1895.

In compliance with the Minute of the 18th March we have considered:—

1. Whether the rule laid down in the Order in Council of January 30th, 1893, is in accord with, and calculated to secure compliance with, the requirements of Articles 3 and 15 of the International Regulations for preventing Collisions at Sea, as to the fixing and screening of the side-lights of vessels.

2. Whether it is desirable in the interests of safety, and in order to secure due compliance with the above-mentioned Articles, that any, and what, alterations should be made in the instructions issued by the Board of Trade to their surveyors in the matter.

The Order in Council of January 30th, 1893, in order to explain the Regulations contained in the schedule to an Order in Council of August 11th, 1884 (which are known as the International Regulations), modifies them by the addition to Article 3 of the following provision:—

"To ensure that the red and green side-lights shall show an uniform light from right ahead of the ship to two points abaft the beam on the port and starboard sides respectively, and shall not show across the bow of the ship itself, the said lights must be fixed, and the screens fitted, so that the rays from the red and green lights shall cross the line of the ship's keel projected ahead of the ship at a reasonable distance ahead of the ship.

"With regard to all vessels whose lights are inspected by the officers of the Board of Trade, the red or green side-light will not be deemed to be fixed and fitted in accordance with the Regulations, unless it is so fixed and screened that a line drawn from the outside edge of the wick to the foremost end of the inboard screen of such light shall make an angle of 4 degrees, or as near thereto as may be practicable, with a line drawn parallel with the keel of the ship from the outside edge of the wick."

It is, therefore, no part of the duty of this Committee to consider whether any amendment of the International Regulations be desirable, nor does the provision just quoted profess to effect any alterations in, but only to explain, the previous Order in Council. But it is clear that the later places an interpretation on the earlier Order, and further proceeds to decide a question of fact raised by such interpretation. The Order of January 1893 declares, in effect, that, according to the true construction of the Regulations, and in order to comply with them so understood, the rays from the red and green lights must cross the line of the ship's keel projected ahead of the ship at a reasonable distance from the ship, and, secondly, it determines what is such reasonable distance by ordering that the lights shall be screened to an angle of 4 degrees, or as near thereto as may be practicable, from the outside edge of the wick. The question at issue, and that to which all discussion on the interpretation of the Articles in question leads up, is at what angle, with regard to the light, should the screen be placed? It is, therefore, necessary, in the first place, to endeavour to ascertain how far the language of the International Regulations affords guidance on the subject.

Article 3 (*a*) provides as follows:—

"A seagoing steamship when under way shall carry—

"On or in front of the foremast at a height above the hull of not less than 20 feet, and if the breadth of the ship exceeds 20 feet, then at a height above the hull not less than such breadth, a bright white light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the ship, viz., from right ahead to two points abaft the beam on either side, and of such a character as to be visible on a dark night with a clear atmosphere of a distance of at least five miles."

This Article prescribes the construction, the position, and the character of the light, that is to say, the construction and position of the lantern with the light, or

*Sir Digby Murray.*

27 Mar. 1895.

"more than is possible; and secondly, to ensure that "the distance ahead within which neither light is "seen is not greater than can be avoided." Now that expresses the principle which from first to last has been before the mind of the Board of Trade?—Yes. The diagrams which illustrate the matter were never altered until 1892; they were then altered on my recommendation.

61. I think you were going to explain that there had been some mistake made in 1879 with regard to a confusion between the word "wick" and the word "lens"?—Yes, and I would ask you to alter it to 1875. I may say that these instructions are out of print, and it has been difficult for me to get copies of them, and when I asked for all the previous instructions they were sent to me without the re-issue in 1875, and I find that that mistake occurred in the first place in 1875. I presume I need not allude to the instructions of 1872, which are identical with those of 1868.

62. Were these instructions of 1868 repeated in subsequent years?—Yes, in 1872 they were, and they have practically been repeated up to 1892, with the exception of the error to which I am about to call your attention. You will observe in the first place that this paragraph in the Instructions of 1875, to which I call your attention, is perfectly correct.

63. I will read it, with the Committee's permission:—"Or a chock equal in thickness to the "distance between the inner edge of the lens and "the side of the screen may be secured to the "fore end of the screen, or the lamp may be so "placed that the outside of the screen will come "against the inner edge of the lens"; so that the word in both cases is "lens"?—But in the next paragraph you will see the word "wick" has been substituted for the word "lens."

64. Later on in these same Instructions of 1875 occurs this passage: "For both lights to be seen ahead it is "necessary that the red and green rays should cross at "a certain distance ahead. Surveyors will probably find "that if the inboard edge of the *wick* touches a line "parallel with the keel of the ship, and that cuts "the outer edge of the forward end of the inboard "screen, the rays will cross suitably." Then was that a mere misprint?—It was entirely a misprint, as is shown not only by the former passage, but also by the drawings, which are exactly the same as they were before. It is a misprint for the word "lens."

65. The intention was that it should be the edge of the lens that should regulate the depth of the chock and not the edge of the wick?—Yes; if it was regulated from the inner edge of the wick, the screening would be remarkably fine; in the case of a 1-inch wick, placed at right angles to the ship's keel, it would give an angle of 1° 35′, but if the wick was placed parallel with the chord of the arc, which is of the two more frequently the case, the angle would be 1° 16′.

66. Then when was the error corrected?—It was not corrected until 1887. It never came under the notice of anybody. The clerk who ought to have read it and compared it seems to have overlooked it.

67. The view the Board of Trade took was that this was a mistake, and they acted upon it by remedying it, as I understand, in 1887?—Yes. I may say that the Board of Trade Surveyors have always construed it as if it were the inner edge of the *lens*, not the edge of the *wick*. In the Instructions of 1887 you may see that the line drawn from the inner edge of the lens to the outer edge of the chock is called the line of reference. In the Instructions of 1891, which were the next, this line is printed in the same way as the line of reference.

68. And I see in both cases the line of reference is a line from the edge of the chock to the edge of the lens?—From the inner edge of the lens to the chock.

69. So that those diagrams clearly show that the inner edge of the lens is intended and not the inner edge of the wick?—Yes, and you will see that the earliest diagrams—those of 1868—were never altered until 1892.

70. Were the same instructions worked upon both in 1887 and again in 1891?—Yes.

71. Were those instructions the instructions in force up to the recent alteration in them which is really now in question?—Yes, until 1892.

72. Perhaps you will kindly read to the Committee the instructions of the Board of Trade which are now in force?—"Side lights are always to be "screened to an angle of 4°, and are to be fitted "as follows, excepting when in turrets, in which case "it may be thought desirable so to arrange the "screens as to dispense with chocks, *see* Plate 1. "When the screens are fitted as in Figs. 3 and 4, "Plate 2, the outer wall of the screen is to be con-"sidered as the chock."* And then there is a drawing which shows exactly how they are to be screened.

73. Can you state to what angle the lights would be screened from the outer edge of the wick if the suggestions contained in the *old* Instructions had been complied with by the surveyors?—The mean in the case of lamps of the patterns in use prior to 1892 would be 4° 30′.† I put in a list of a number of measurements which were taken. The measurements were made by myself, and perhaps it would be convenient to you, either now or presently, for me to show how those measurements were made. There is a diagram here which shows it.

74. I think it would be convenient at the present moment. (*A diagram was produced*)?—The measurements in each case were taken from the inner side of the lantern to the outer edge of the wick. Subsequently to that the measurement was taken from the inner side of the lantern to the inner edge of the lens. Then this latter measurement was deducted from the larger measurement, and the difference was of course the tangent of the angle.

75. (*Sir F. Evans.*) The tangent of the angle at what point?—The tangent of the angle corresponding to a length of screen of 36 inches.

76. (*Sir E. Harland.*) Is that with the object of setting off the thickness of the chock?—Yes, the diagram shows the depth of chock required for angles of from 1° to 4°, but this particular depth of chock corresponds to a screening of 4°.

77. (*Mr. Ismay.*) According to the present practice?—The angle, yes; but the position of the wick is not in accordance with the present practice, because we now suggest that the centre of the wick shall be the centre of the curvature of the lens. We had a little trouble about it, for some makers set back the wick, without altering the construction of the lamp.

78. (*Chairman.*) I think it is your opinion, is it not, that the effect of this rule as to 4° in point of fact has decreased and not increased the actual angle of screening?—Yes, that is actually the case. I put in a statement prepared by the Secretary of the Rule of the Road Committee, which shows what has actually been the effect of the 4° rule.

79. It is in your view, is it not, undoubtedly the case that the angle before 1892 was a larger angle than 4°?—There is no doubt about it. I shall be able to put further evidence before you to show that that was the case.

80. Does this summary of the reports from the various districts, which you have put in, show that the angle was never less than 4°, though in many cases it appears to have gone up to as much as 10°?—No, the angle has been less than 4° in some cases, but in the majority of cases it has been either 4° or over. There are a number of measurements given in another paper which I propose to put in and they show that the angle has been smaller than 4° in some cases. On the other hand it appears from a return which was handed in to the Rule of the Road Committee by the marine superintendent of the Peninsular and Oriental Company that in 80 per cent. of their vessels the lights were screened to 4° or over, prior to their being rescreened in accordance with the 1892 Instructions.

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* *See* Appendix 2, No. 1.
† *See* Q. 4020, 5057-9.

the area within which both lights are visible be closely limited it is clear that this object would be frustrated, and that those on board a vessel seeing both lights of another would have imperfect information as to her direction, and would be ignorant how, with regard to her, their own course should be directed.

It was therefore provided by Article 3 (*d*) :—

"The said green and red side lights shall be fitted with inboard screens projecting at least 3 feet forward from the light, so as to prevent these lights from being seen across the bow."

Now from these words can it be gathered in what position the screens should be placed as regards the lights, that is to say, the sources of light in the lanterns? The Committee think that it can. It is, in their opinion, clear that no part of the screen must impede the full light being seen ahead where otherwise it would be exhibited, or, in other words, the foremost end of the screen must not pass a line drawn from the inside edge of the source of light parallel to the keel, because, if it does, the preceding provision as to the uniform light of a lamp in the prescribed position being seen over 10 points of the horizon is infringed. That gives the extreme permissible limit of the foremost end of the screen outwards from the ship. As regards its position in the reverse direction, or away from the source of light, there is no express provision. But the object being, as has been said, to confine the area within which both lights can be seen, it would seem, in the absence of directions to the contrary, that the arrangement which limits it most closely is the one intended. Again: the minimum length of the screen is prescribed. It is to be at least 3 feet long. Unless the position of the screen as regards the light be postulated this is a meaningless provision; and the reasonable conclusion would appear to be that it was assumed that the edge of the screen would, like the edge of the lens, be in a line with the edge of the source of light and parallel with the keel. In that view, the provision is intelligible and consistent. The screen is not to prevent any part of the full light being seen ahead, but, without doing this, it is to cut off as much of the crossing light as can be intercepted by a screen of at least 3 feet long, the discretionary extension of length beyond 3 feet being, probably, intended to meet special cases. Its foremost edge, therefore, must be in a line right ahead, or parallel with the keel, from the inner edge of the source of light.

It was said above that a lamp showing a full light with theoretical exactness ahead of itself in a line parallel with the ship's keel will show a light of almost the same power ahead of the stem at a short distance from it. It will do nearly the same thing even if screened as just suggested. The Committee have thought it desirable to make careful experiments on this point, and the result, beyond question, is that lights so screened* are in every case seen in their full strength ahead of the lamp, and, at distances of and over 500 yards, are seen in full, or almost full, strength on the line of the ship's keel projected, and, to anyone approaching the ship on that line, remain clearly visible to a distance of about 60 yards from the lamps themselves. The electric light† so screened can be seen at 500 yards, and upwards, in full strength on the centre line, and remains visible, as the ship is approached, on that line to about 55 yards from the lamps. It has been urged, with regard to the finer degrees of screening, that there would be produced in front of the stem a space within which no light would be visible, which has been, in popular language, described as a "dark lane." It is clear from the results of the experiments of the Committee that the mode of screening recommended by them will, in fact, create no such dark lane. Within every distance that is material, the lights on a vessel remain perceptible on a projected line of her keel.

The Committee have up to this time used the phrase "source of light" in order not to prejudice the question whether, in an oil lamp, the position of the screen should be regulated with regard to the wick or its flame. But, at this point, they may conveniently say that, though authorities deserving respect have considered that the flame should be treated as the source of light, they see no reason to differ from the view of the Board of Trade that the wick may, for practical purposes, be so treated. The breadth of the flame beyond the wick of an oil lamp varies so considerably in different lamps, and under changing circumstances, that it would be difficult, if not impossible, to frame a workable rule in reference to it, and the Committee do not think any theoretical

* The experiments were conducted with a wick $\frac{1}{2}$ of an inch broad, placed at an angle of 44° from the line of the keel, and a screen 3 feet long from the wick, and a distance of 45 feet between the lamps. *See* Appendix, No. 9.

† *See* Appendix, No. 12.

source of light, within it, and the character or power of that source of light. The lantern is to be so constructed as to show a uniform and unbroken light over an arc of the horizon of 20 points. It is obvious that this is intended to be secured by the width of the aperture containing the glass lens, or, in other words, that the edges of the frame containing the lens shall, by their relation to the source of light, allow that light to be uniformly exhibited over 20 points of the compass. Next, the position of the lantern is to be such that these 20 points are the 20 points from two points abaft the beam on one side, round, and ahead of, the ship to two points abaft the beam on the other side. The construction of the lantern determines the magnitude of the equally illuminated arc; the position of the lantern determines the situation of that arc. We need not at present concern ourselves with the power of the light.

Then follow provisions as to the side-lights clearly intended to be consonant with those as to the masthead light.

Article 3 (*b*) provides as to the green light, Article 3 (*c*) making a corresponding provision as to the red light, as follows:—

"On the starboard side, a green light so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least two miles."

It would seem indisputable, but it is most important to observe, that, as in the case of the masthead light, the lantern of the green lamp is to be so constructed as to determine the magnitude of the arc over which a uniform light is to be exhibited. It is to show such a light over 10 points, and 10 points only, of the horizon. Then, it, and the corresponding red light, are so to be placed that together they exhibit their light uniformly over 20 points of the horizon, clearly the same 20 points as are illuminated by the uniform strength of the masthead light, as the limits abaft the beam are identical.

The question has been much discussed whether the words "right ahead" in Article 3 (*b*) and (*c*) mean ahead of the light or ahead of the ship. The Committee think it probable that the framers of the Article did not intend to draw any distinction between ahead of the lamp and ahead of the ship, did not consider that the phrase "right ahead" should be limited to the line of the ship's keel projected, and treated anything within the space formed by two lines parallel with the keel and separated by the breadth of the beam as ahead of the ship. But the question does not appear to be of practical importance. When once it is understood to be directed that by means of the relation between the two edges of the lens and the source of light in the lantern, the exhibition of the light in its full volume shall take place over an arc of 10 points, neither more nor less, it is obvious that, strictly and theoretically, a direction that the full light shall be exhibited from right ahead of the stem of the ship to two points abaft the beam of the ship cannot be complied with, nor if right ahead be understood to mean right ahead of the lamp, can the direction be complied with unless the lamp be placed precisely amidships. It cannot have been intended that such a position should be the only permissible position of the light. The inference is that the terms of the rule are to be followed only with the best practicable exactness; and they certainly are so complied with, if, wherever, on or near the ship's bulwarks, the light is exhibited, the full volume of light is thrown forward in a line parallel with the keel of the vessel. So placed, the two side lamps will together, so far as is possible, show their full volume of light over the same 20 points as those over which the full light of the masthead light is exhibited. Of course if the lights be placed even, as possibly in some cases originally they were placed, at the stem of the vessel, the full light will not be shown within a space ahead of the ship equal to the breadth between the lights, but on whatever part of the ship's side the lamp be placed, so much of the light will be seen on a centre line from the ship's stem at no great distance from it as to have practically the same effect as the whole.

It is obvious, however, that if the red and green lights respectively throw a uniform or full light over two equal arcs of the horizon, such arcs meeting, or nearly meeting, right ahead of the ship, not the whole, but a part, of the lights of the two lamps must cross somewhere on a projected line of the ship's keel. Article 15 indicates, and the same thing will be presently shown to have been the express object of those by whom screens were first introduced, that both lights should not be seen at the same moment from any direction but that of right ahead, or, in other words, when the lights are exhibited by a vessel approaching end on or nearly end on. Unless

the area within which both lights are visible be closely limited it is clear that this object would be frustrated, and that those on board a vessel seeing both lights of another would have imperfect information as to her direction, and would be ignorant how, with regard to her, their own course should be directed.

It was therefore provided by Article 3 (*d*) :—

"The said green and red side lights shall be fitted with inboard screens projecting at least 3 feet forward from the light, so as to prevent these lights from being seen across the bow."

Now from these words can it be gathered in what position the screens should be placed as regards the lights, that is to say, the sources of light in the lanterns? The Committee think that it can. It is, in their opinion, clear that no part of the screen must impede the full light being seen ahead where otherwise it would be exhibited, or, in other words, the foremost end of the screen must not pass a line drawn from the inside edge of the source of light parallel to the keel, because, if it does, the preceding provision as to the uniform light of a lamp in the prescribed position being seen over 10 points of the horizon is infringed. That gives the extreme permissible limit of the foremost end of the screen outwards from the ship. As regards its position in the reverse direction, or away from the source of light, there is no express provision. But the object being, as has been said, to confine the area within which both lights can be seen, it would seem, in the absence of directions to the contrary, that the arrangement which limits it most closely is the one intended. Again: the minimum length of the screen is prescribed. It is to be at least 3 feet long. Unless the position of the screen as regards the light be postulated this is a meaningless provision; and the reasonable conclusion would appear to be that it was assumed that the edge of the screen would, like the edge of the lens, be in a line with the edge of the source of light and parallel with the keel. In that view, the provision is intelligible and consistent. The screen is not to prevent any part of the full light being seen ahead, but, without doing this, it is to cut off as much of the crossing light as can be intercepted by a screen of at least 3 feet long, the discretionary extension of length beyond 3 feet being, probably, intended to meet special cases. Its foremost edge, therefore, must be in a line right ahead, or parallel with the keel, from the inner edge of the source of light.

It was said above that a lamp showing a full light with theoretical exactness ahead of itself in a line parallel with the ship's keel will show a light of almost the same power ahead of the stem at a short distance from it. It will do nearly the same thing even if screened as just suggested. The Committee have thought it desirable to make careful experiments on this point, and the result, beyond question, is that lights so screened* are in every case seen in their full strength ahead of the lamp, and, at distances of and over 500 yards, are seen in full, or almost full, strength on the line of the ship's keel projected, and, to anyone approaching the ship on that line, remain clearly visible to a distance of about 60 yards from the lamps themselves. The electric light† so screened can be seen at 500 yards, and upwards, in full strength on the centre line, and remains visible, as the ship is approached, on that line to about 55 yards from the lamps. It has been urged, with regard to the finer degrees of screening, that there would be produced in front of the stem a space within which no light would be visible, which has been, in popular language, described as a "dark lane." It is clear from the results of the experiments of the Committee that the mode of screening recommended by them will, in fact, create no such dark lane. Within every distance that is material, the lights on a vessel remain perceptible on a projected line of her keel.

The Committee have up to this time used the phrase "source of light" in order not to prejudice the question whether, in an oil lamp, the position of the screen should be regulated with regard to the wick or its flame. But, at this point, they may conveniently say that, though authorities deserving respect have considered that the flame should be treated as the source of light, they see no reason to differ from the view of the Board of Trade that the wick may, for practical purposes, be so treated. The breadth of the flame beyond the wick of an oil lamp varies so considerably in different lamps, and under changing circumstances, that it would be difficult, if not impossible, to frame a workable rule in reference to it, and the Committee do not think any theoretical

* The experiments were conducted with a wick $\frac{1}{2}$ of an inch broad, placed at an angle of 44 from the line of the keel, and a screen 3 feet long from the wick, and a distance of 45 feet between the lamps. *See* Appendix, No. 9.

† *See* Appendix, No. 12.

error of sufficient practical importance to render it necessary to make the attempt The wick, in an oil lamp, may, therefore, be treated as the source of light, and will be herein-after so referred to.

The Committee think that the interpretation of Article 3, which commends itself to their minds, derives material support from reference to the earlier Orders in which the Regulations were embodied.

Attention was drawn to the want of a uniform system of night signals for steamers by the reports of a Committee of the House of Commons and a Royal Commission in 1831 and 1836, and the general adoption of side-lights was recommended in a report made to the Board of Trade in 1839.* On the 11th of July 1848 the Admiralty, under the powers of the Act 9 & 10 Vict. c. 100., made an Order† which, so far as is material in regard to the masthead and side-lights of steamships under weigh, and the screening of side-lights, was as follows :—

1. "The masthead light to be visible at least 5 miles in a clear dark night, and the lantern to be so constructed as to show a uniform and unbroken light over an arc of the horizon of 20 points of the compass, viz., from right ahead to two points abaft the beam on each side of the ship. 2. The coloured side-lights to be visible at a distance of at least 2 miles in a clear dark night, and the lanterns to be so constructed as to show a uniform and unbroken light over an arc of the horizon of 10 points of the compass, viz., from right ahead to two points abaft the beam, on their respective sides. 3. The side-lights to be moreover fitted with inboard screens of at least 3 feet long to prevent them from being seen across the bow. The screens to be placed in a fore-and-aft line with the inner edge of the side-lights."

Before the promulgation of this Order the Admiralty had issued a paper‡ which is of importance as an authoritative statement explaining the purpose and effect of screens at their first introduction. It was pointed out in this document that the objects of lights are to indicate not only whether an approaching vessel be a steamer, and whether she be under weigh, but also the direction of her head, and diagrams were subjoined showing the masthead light and the red and green lights, and then the paper proceeds to say :—

"The manner of fixing the coloured lights should be particularly attended to. They would require to be fitted each with a screen of wood or canvas on the inboard side, in order to prevent both being seen at the same moment from any direction but that of right ahead. This is important, for without the screens (a principle first introduced with this plan) any plan of bow lights would be ineffective as a means of indicating the direction of steering."

On the 1st of May 1852,† under the powers of the Act 14 & 15 Vict. c. 79., the Admiralty again issued orders on the subject of ships' lights. The only alteration other than verbal which it is material to observe is that the direction, "the screens to "be placed in a fore-and-aft line with the inner edge of the side-lights," was omitted.

On the 5th March 1858† revised Regulations were issued by the Admiralty, which differ only verbally from those previously in force. For them were substituted Regulations practically identical as to screening in 1862; and from that time until the Order in Council of January 1893 no change was made in the Regulations on this subject.

It would seem therefore clear that from 1849 to 1893 the Regulations as regards side-lights and their screening were intended to be in effect the same. We find that at all times the magnitude of the arc on the horizon over which a uniform light is to be shown, is to be determined by the construction of the lantern; and we find also that, on the first introduction of screens, their object was to prevent "both lights being seen at the same moment from any direction but that of right ahead,"§ and that this was to be accomplished by the direction, "the screens to be placed in a fore-and-aft line with the inner edge of the side-lights."† It appears to the Committee impossible to avoid the inference, that the intention of this direction was that the screens should be placed so as to intercept as much of the cross light as possible consistently with the full light being thrown ahead.

Two views differing from the interpretation which the Committee place on the language of the Regulations have been maintained.

Both of these views rest on the construction placed on the words "so as to prevent the light from being seen across the bow."

* Questions 6 and 7. † *See* Appendix 1, No. 1. ‡ *See* Questions 10 to 13.
§ *See* Question 13.

The advocates of the first view understand the words "the light" to mean not the full light only but any rays of it, and the words "across the bow" not to be limited to a point on the stem of the vessel but to extend to all distances ahead of the stem. Accordingly they contend that the lights must be screened in a line parallel with the keel from the outer edge of the wick. But to this view there appears to be the grave objection that it renders Article 3 (*d*) inconsistent with (*b*) and (*c*). If the light be so screened its full power will not be exhibited right ahead either of the lamp or the ship, and the 10 points over which the uniform light is to be shown is reduced. It may indeed be said that Article 3 (*d*) is to be read as modifying (*b*) and (*c*). But the language is not apt for that purpose. It is clear that the prescribed length of the screen is to promote the stated object of the provisions. But if the whole wick be screened the longer the screen the less the area of obscuration ahead.* Again: there are practical objections to such a mode of screening which appear to render the interpretation on which it is based improbable. In this case there is no doubt a space within which no light can be seen, or, what has been called, a "dark lane" ahead of the ship. Different views may be entertained of the weight of the practical objections to it, but it is difficult to suppose that the framers of the regulations, when they said that the lights should not be seen across the bow, meant that neither light should be seen ahead of it. The Committee do not dwell longer on this view because it has not received any general support.

The second view, in order to avoid inconsistency between Article 3 (*d*) and (*b*) and (*c*), suggests that the words "to prevent the lights from being seen across the bow" mean from being seen across the bow at the stem, and that, therefore, a screen would comply with these provisions of the article if it prevented the most convergent rays of light being seen at the actual head of the vessel. This interpretation has received the sanction of Law Officers of the Crown, and it is probably the construction upon which the present Order in Council is based. But the Committee not only feel the greatest difficulty in limiting the phrase "across the bow," well understood as it is in ordinary use, to a special meaning of a line crossing the actual stem, but other arguments appear to them to militate against the above view. If the intention was only to prevent the light being seen at the stem it would have been easy to have said so, and unnecessary to have prescribed any length for the screen. It is an even more forcible consideration that no responsible authority has, so far as the Committee are aware, yet advocated the light crossing at the bows of the vessel. On the contrary, the terms of the present Order, and the discussions which led up to it, repudiate such a practice.

The Committee now turn to the Instructions to Surveyors which were issued by the Board of Trade in order to secure compliance with the Regulations for Preventing Collisions at Sea. The first of them appeared in 1868,† and successive Instructions, each superseding the former, were issued in 1872, 1875, 1879, 1884, 1887, and 1891. In 1868 the attention of the authorities of the Board of Trade was called to the difficulty which existed in determining how the screens should be fixed and to the diversity of practice which prevailed as to the angle at which the side-lights were screened. After consultation with the Admiralty and with the Trinity House, Instructions, accompanied with diagrams, were issued by the Board of Trade in September 1868. The terms of these Instructions, so far as is material in reference to this present question, were repeated with only one significant variation, and the diagrams without variation, until Instructions similar to those at present in force were issued in 1892. It may be doubted whether the conditions of the question presented themselves very clearly to the minds of the framers of the earliest Instructions. The problem is thus stated in language that is certainly obscure and even self-contradictory: "The real "points to be studied in fixing and arranging the inboard screens appear to be—

"*First*.—To ensure that the rays of the red and green side-lights do not cross each "other immediately on leaving the ship, nor at all more than is possible;

"*Secondly*.—To ensure that the distance ahead within which neither light is seen "is not greater than can be avoided."

Of these two requirements the former would seem to insist on the dark space ahead of the ship being as large, the second on its being as small as possible. The Instructions proceeded to direct that the screens should obscure the light in a line parallel with the keel from the inner edge of the lens. Now, had the lamps been constructed as in strictness they should have been, that is to say, with the inner edge of the lens in a

* A sketch illustrating this will be found in Appendix 22.

† *See* Appendix 1, No. 2

line parallel with the keel in relation to the inner edge of the wick, such an Instruction would have ensured uniformity, and would have produced the results which the Committee think were intended by the Regulations for preventing Collisions at Sea.*

But it is remarkable that, though the Instructions prescribed screening to the inner edge of the lens, nothing was said from which the position of the inner edge of the lens relative to the wick was to be gathered. It is difficult to suppose that unless it was assumed that the edge of the lens had some fixed relation to the source of light there should have been such an omission, or that it should have escaped observation that, with that relation left undetermined, the Instructions would fail to give any direction of utility to the surveyors, or to produce uniformity in the effect of screening. The obvious inference is that originally it was taken for granted that the edge of the lens would be in a line drawn parallel with the keel from the inner edge of the wick, and this inference is strengthened by the fact that in the editions of the Instructions issued in 1875, 1879, and 1884, and not altered till 1887, the following direction occurs:—"Surveyors will probably find that if the inboard edge of the wick touch "a line that is parallel with the keel of the ship, and that cuts the outer edge of "the forward end of the inboard screen, the rays will cross suitably. Surveyors "should give this subject their serious consideration." We have been assured† that this is a printer's error of "wick" for "lens," but the acceptance of this view leads the Committee to think that no distinction between the two was supposed to exist. No doubt the diagrams and text illustrated by them, which remained unchanged throughout, tend to indicate, though imperfectly, that a screening to the inner edge of the lens was intended, and that the inner edge of the wick was not contemplated as being, necessarily at least, in a direct fore-and-aft line with it. We have, however, been informed‡ by a naval officer whose attention was specially directed to this subject in 1868, and who was in communication with the Board of Trade after that date, that he understood that, at that time, the responsible advisers of the Board agreed with his own view, that the screening should be to the inner edge of the wick. And, unless for this purpose, the terms "wick" and "lens" were considered convertible, it is not easy to see how such an error escaped immediate observation, and, certainly the direction to the surveyors would have been too inexact to serve the purpose it professed to accomplish. Further, it is clear that any discrepancy between "wick" and "lens" remained unnoticed for twelve years, and through two renewed editions of the Instructions. During that time many of the surveyors must have directed screening to the inner edge of the wick without correction from their superiors. It would also appear, from answers to questions addressed by ourselves, that several leading firms of shipowners§ and a lamp maker of the greatest experience,‖ as well as practical seamen,¶ were, and still are, under the impression that, before the present Order in Council, the Instructions directed screening to the inner edge of the wick, a belief apparently shared by at least one foreign country.**

In 1887 the whole sentence just quoted, containing the directions as to screening to the inside edge of the wick, was withdrawn from the Instructions then issued. The same indication as before was given by the diagrams and the accompanying text, as to screening to the edge of the lens. Further, a table was introduced showing the distances at which the most convergent rays would cross in vessels of 20 and 40 feet beam respectively, with different lengths of screens and different positions of the most convergent ray of light in the lamp in regard to what was termed "the line of reference," that is to say, a line drawn through the inner edge of the lens parallel with the keel. But nothing was said to guide the decision of the surveyor as to what length of screen, or what distance of the most convergent ray from the line of reference, should be selected, and so no guide as to the angle of screening was afforded. It would appear, therefore, that the principle of screening to the inner edge of the wick at one time, though perhaps imperfectly, apprehended, had been forgotten, or departed from, and no other principle, determining the angle of screening, adopted in its place.

It was the natural result, and beyond question was the case, that under the Instructions in force before the present orders, great variety of screening prevailed.†† The facts as to the actual screening in force before the present Order in Council have received much investigation, and the result would appear to be that, while in many

* *See* evidence of Mr. Corry, Questions 1257 and 1287, and Mr. Harvie, Questions 3677–9.

† Evidence of Sir Digby Murray, Questions 61, 209. *See also* Evidence of Mr. Ramsay, Question 742, and of Captain Chalmers, Question 904.

‡ Evidence of Vice-Admiral Colomb, Question 2548.

§ Appendix No. 19.

‖ Evidence of Mr. Harvie, 3565.

¶ Questions 2033, 2953.

** Parl. Paper, C. 6869, pp. 137, 138.

†† *See* Questions 283–6.

instances, and especially in the cases of vessels of high class, and belonging to well-known lines of steamers, a finer angle than the 4° prescribed by the present Order existed, in a very great number of vessels the screening was at a greater angle. We were informed by Sir Digby Murray* that in the case of lamps of the pattern in use previous to 1892, screening to the inner edge of the lens would give an angle equivalent, in the mean, to one not exceeding 4 degrees from the outer edge of the wick. The Committee are inclined to think that in many, perhaps the majority of, cases sailors believed that the lights were screened more finely than in fact was the case, and that the light from the side-lights was seen but little across the path of the vessel. It may well be that similar beliefs were entertained by surveyors of the Board of Trade, and that for this reason the great divergence of practice failed to attract the attention which it would otherwise have excited.

The Regulations for preventing Collisions at Sea assumed an international character by virtue of an agreement between England and France in 1862, and a very large number of the Powers subsequently acceded to them. The International Marine Conference assembled at Washington in October 1889. As regards the screening of side-lights, the Conference did not recommend any alteration of the international Regulations, but they passed a resolution in the following terms: "Side-lights should "be so screened as to prevent the most convergent rays of the light being seen "more than half a point across the bow."† The authority of this resolution is invoked by those who advocate the degree of screening enforced by the Order in Council of January 1893. But a perusal of the proceedings of the Conference will show that it was not so much the proper angle of screening that was insisted on, as the necessity of some of the rays of light crossing at some point ahead of the vessel, and the advantages of a uniform rule on the subject. Indeed, it would appear that the Conference proceeded in the belief that the Board of Trade had laid down a rule that the rays should not cross at a less distance from the ship than five ‡ times a breadth of the beam, and based the half point recommended by them on their view of these Instructions, whereas no such direction was, as we have seen, issued by the Board of Trade, and in fact the figures in the table above described give a result varying from $5\frac{1}{4}$ to $13\frac{1}{2}$ beams, the average being about $8\frac{1}{2}$ beams. But the actual angle of screening was clearly not considered of importance. The representative of Germany, by which Power the resolution was proposed, appears to have said §: "If half a point would "not be acceptable to any of the Governments, I think it would be very easy to "alter it accordingly, or so as to make it one point. I would state here that it really "makes but very little difference whether the limit is given at half a point or a point, "or a point and a half, if only one can rely upon it that in every ship the limit is "complied with." The representative of France said ‖: "Two systems are in the "presence of each other, one in which the lights do not cross except at an infinite "distance, the other when the lights cross at a defined distance. But what matters "the system provided the solution be uniform?"

The present Order was issued on January 30, 1893. At the close of that year it was with other matters submitted to the consideration of a Departmental Committee of the Board of Trade, consisting of persons of high authority. The Committee reported, ¶ on December 8, 1893: "We consider that the rule now in force under "the Order in Council of January 1893 merely confirms the previous practice of the "Board of Trade, and that the method of measurement now laid down is better "calculated to ensure uniformity of screening, and as this practice has up to the "present time worked well we see no necessity for the rule being altered. At the "same time, we desire to point out that no strict uniformity of the angle at which "the full strength of the lights is in practice visible is possible so long as a great "variety of patterns of lamps are in use, and in view of this fact, as well as of the "great improvements which have been and are being made in the construction of "lamps, and in the power of illuminants, and of the great increase in the size and "speed of ships, we think that the Board of Trade should in certain cases, upon the "request of the shipowner, have power to allow the angle of screening to be reduced "to 3°, or in special cases to even less than that angle."

It will be seen, therefore, that, though following different paths of reasoning, the Committee find themselves in agreement not only with the framers of the Order of January 30, 1893, but with the Washington Conference, and the Committee just referred to, to the effect that, under the International Regulations, some portion of the

* Questions 73, 105, 4920, 5057–9. † Parl. Paper, C. 6255, p. 198. ‡ *See* Question 3185.
§ Parl. Paper. C. 6255, 189. ‖ Parl. Paper, C. 6255, p. 197. ¶ *See* Appendix 1, No. 4.

rays from the side-lights must cross at some point directly ahead of the stem of the vessel. They further agree with the principle carried out by the Order of January 30, 1893, of fixing the position of the screen by relation to the wick.

Proceeding on their view of the interpretation of the International Regulations, the Committee find themselves at variance with the practical conclusion of the present Order to the extent of the difference between a screening of 4° from the outside edge of the wick and a screening from the inside edge of the wick, a difference which with an inch wick and a 3-foot screen amounts to about two degrees and a half. But the Committee do not consider that the Washington Conference, or the Committee of 1893, gave the weight of their authority so completely to any particular angle of screening, though no doubt both bodies approved a degree of screening broader than that which commends itself to the Committee, as to impress the Committee with the sense of serious difference from them on this point.

The Committee would, however, have hesitated to attach to the International Regulations the sense which they have suggested, had it failed to commend itself, in its practical application and consequences, to the minds of men of nautical knowledge. The Committee are also the more anxious to bring the matter to the test of practical experience, because, if they have the misfortune to differ from the construction of the Regulations adopted in the Order in Council under consideration, it will be observed that the only conclusion drawn by the framers of the Order from their interpretation of the Regulations is that "the rays from the red and green lights shall cross the "line of the ship's keel projected ahead of the ship at a reasonable distance ahead of "the ship." What, then, is such a reasonable distance, and how is its attainment to be regulated? The answer supplied by the Order is that the rule should be contained in a direction to screen at an angle of 4° from the outside of the wick, and the question arises, is this the best angle of screening?

The Committee have given the most careful consideration in their power to the question presenting itself to them in this form.

The question confines itself practically within narrow limits. The authority of the Order is given to an angle of 4° from the outside of the wick. It may be safely said that, with the exception of the Washington Conference, no important authority has countenanced any broader angle than this. On the other hand, although a screening which obscures a part or the whole of the wick from being seen from right ahead of it has found favour with some persons of experience, the Committee consider it not only excluded by the terms of the Regulations, but also not supported by sufficient weight of practical authority to necessitate prolonged consideration.

The Committee entertain no doubt that as between a broader and a finer mode of screening the balance of nautical knowledge and experience is in favour of the finer. It cannot be doubted that the present Order in Council was received, and is regarded, by shipowners, and by those practically engaged in navigation, with general disapproval. We have investigated this point with care, and the evidence before us has placed the fact of this disapproval, in our opinion, beyond question.

It is said, however, that this disapproval, general as it may be, rests on a mistaken appreciation of the facts, and that in reality the degree of screening prescribed by the present Order is a finer, and not a broader, angle than that in very many, or even the majority of, cases previously existing. There is no doubt great force in this observation. As was said above, the Instructions of the Board of Trade before the present Order were not calculated to produce, and did not produce, uniformity. The Committee do not doubt that many shipowners, many masters, and many pilots were unaware of the angle of screening of the vessels they owned or navigated; it was, indeed, a widespread belief that the side-lights were not seen on the opposite bow. But the Committee are nevertheless not disposed to undervalue the general opinion of men of practical experience when, though perhaps for the first time, the matter is brought clearly to their attention, and sufficient time has elapsed to allow opinion to be fairly formed upon it.

The points at issue have been subjected to much practical discussion, but the result may be stated shortly.

One main consideration appears to underlie the views of those who advocate a screening as broad as 4° from the outside edge of the wick, and especially of the advisers of the Board of Trade. It is that with a finer screening each of two vessels approaching each other on opposite and parallel courses might see only one light of the other, and yet the two vessels keeping their courses would collide. Thus, it is said, would arise a position of danger in which the International Regulations afford

no guide. Nay, more, the inference from them—correctly, it is contended—expressed in the well-known verses of Mr. Thomas Gray—

Green to green, or red to red,
Perfect safety, go ahead;

would become mistaken and misleading. A vessel having the green light of another vessel opposed to her own green light would not be in perfect safety if the courses of both vessels remain unaltered.

In support of this argument reference is made to the 15th Article of the International Regulations. That Article provides:—

"If two ships under steam are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other.

"This article only applies to cases where ships are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two ships which must, if both keep on their respective courses, pass clear of each other.

"The only cases to which it does apply are, when each of the two ships is end on, or nearly end on, to the other; in other words, to cases in which by day each ship sees the masts of the other in a line, or nearly in a line, with her own; and by night to cases in which each ship is in such a position as to see both the side-lights of the other.

"It does not apply by day to cases in which a ship sees another ahead crossing her own course; or by night to cases where the red light of one ship is opposed to the red light of the other, or where the green light of one ship is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light, is seen ahead, or where both green and red lights are seen anywhere but ahead."

In view of this Article it is argued that the position of ships with regard to each other which imposes by day the obligation on each to port is intended to impose the same obligation by night, but that the latter obligation will not arise unless the lights be so screened that two vessels see both lights of each other in every case in which by day-light they would be visibly end on, or nearly end on. Then it is said that vessels approaching each other at angles up to and including 4° would in daytime be considered by competent navigators end on or nearly end on, and so should port.

What is substantially the same argument has been forcibly expressed* in the following form: "Let me put two questions. A. is a steamship steering due W.; "B. is a steamship two degrees on A.'s starboard bow, and steering E. two degrees S., "*i.e.*, directly for A. Are these two ships meeting end on or nearly end on? "Again: A. is a steamship steering due W.; B. is a steamship four degrees on A.'s "starboard bow and steering E. four degrees S. Are these two ships meeting end "on or nearly end on?—In my opinion in both cases the answer should be in the "affirmative, and both ships should port."

The Committee do not doubt that, speaking generally, it is the intention of the Regulations that the direction to port imposed on ships in a certain position by day should apply to ships in the same position by night. It is they think also beyond question desirable, were it practicable, that the Regulations should be so applied as to direct the course of a ship in every position of danger, but should not affect them when in positions free from risk of collision, still less convert positions of safety into positions of danger. But it would appear that in the case of vessels approaching each other end on, or nearly end on, this ideal is, in theory at least, unattainable for the reason that, as we have seen, the side-lights must cross somewhere ahead of the ship. If a screening as broad as four degrees be adopted, the cases in which vessels approaching each other on parallel and opposite courses but not each seeing both lights of the other, would, if they keep their courses, come into collision, are rare, but, with vessels of extreme breadth, they exist. On the other hand, with that screening, there are cases in which two vessels so approaching each other would see both lights of each other and yet, if they keep their courses, would pass clear. If a finer screening than four degrees be adopted the former class of cases—namely, those in which a strict keeping of the course would involve risk—becomes more numerous; but, on the other hand, the latter class—namely, those in which an alteration of the course introduces

* Question 4931.

risk—become, correspondingly, less numerous. These results are, in theory, inevitable so long as side lights cross in the line of the ship's path.

Again: dealing with the specific instances of vessels approaching each other above quoted, the matter resolves itself into this, that unless the position of "end on or nearly end on" be exactly defined, it is always possible to put cases of vessels approaching each other at certain angles, and to raise the question whether under such circumstances they should port. No doubt, if the answer be in the affirmative with regard to vessels so meeting at night, it is tantamount to saying the lights should be screened so that both should show at that angle; but in the absence of any authoritative guidance at what angle of bearing from each other vessels should port at night, the matter is carried no further. And as the breadth of vessels differs greatly, there remains the consideration that no such angle can be fixed without its being either in many cases more than is needful, or in some cases less than perfect safety may, in theory, be supposed to require.

Of the two dangers, that incident to broad screening of two ships which would, if they kept their courses pass clear of each other, being brought into a position of risk by porting, and that incident to fine screening of two ships approaching on opposite courses, and coming into dangerous proximity, the great majority of sailors appear to think the latter the less formidable. The Committee share that opinion. It seems to them hardly conceivable that two ships each seeing the green light of the other slightly on her starboard bow should advance on opposite courses so exactly as to bring their starboard sides into collision when a slight touch of the starboard helm of both or either would carry them clear. It is true that the Regulations do not prescribe the use of the starboard helm in such cases. But it is never to be forgotten, and the Regulations themselves prescribe (Arts. 23 and 24), that in obeying and construing them "due regard shall be had to all dangers of navigation," and that nothing in them "shall exonerate any ship . . from the consequences . . of "the neglect of any precaution which may be required by the ordinary practice "of seamen or by the special circumstances of the case." The Committee do not doubt that the ordinary practice of seamen would prescribe the use of the starboard helm when necessary to avert collision in the supposed case. On the other hand, the Committee think that reasonable apprehensions arise in the case of a screening of side lights as broad as four degrees. There is imposed on ships the obligation of crossing each other's bows, and this is a proceeding necessarily of extreme risk, especially when the vessels are at no great distance from each other and moving at a high rate of speed. Stress has also been laid by pilots and others on this risk in narrow waters, and it has been strongly urged that, in such situations especially, the speedier indication of a change of course afforded by finer screening is of great value. It may be that in the case of some rivers special regulations and the practice of local pilots go far to render the regulation of porting to both lights inapplicable or unnecessary. But there are many places in which ships in considerable numbers meet on opposite courses within limits practically narrow, and in such cases it appears to the Committee of importance, as it has appeared to almost every witness of practical experience called before them, that a vessel should not be compelled unnecessarily to cross the bows of another, with perhaps the result of thus bringing herself into a position in which the operation has to be repeated in regard to one or more successive vessels.

It was stated by several witnesses to the Committee, and no doubt is the fact, that vessels in steering their course always yaw to some, and often to a considerable, extent. Inasmuch as the practical effect of a ship's yawing is to show each light alternately at an increased distance across her course, and thus to magnify the angle of screening, whatever it be, it appears to the Committee that this consideration points to the superior advantage of a finer angle of screening.

The Committee desire to point out that the considerations in favour of the finer screening apply with increased force to the electric light as compared with that of the oil lamp.

The Committee found by their experiments* that with electric lights screened to four degrees from the outside of their filaments, at the distance of one mile (a critical distance in collision cases), the field in which both side-lights could be seen in their full strength was considerably wider with the electric lights than it was with oil lamps, and the field of visibility of the extreme rays was wider, though not to the same

* *See* Appendices 9 and 12.

extent, with the electric lights than with oil lamps. At a distance of two miles (a distance at which the full light of the lamps is of special importance) the field in which both electric side-lights could be seen in their full strength was considerably wider than with oil lamps, but the field of visibility of the extreme rays appeared about the same with oil and electric lights.* It is, indeed, conceded by the advocates of the broader screening that such results of the electric light might render finer screening in the case of that light desirable.† But the experiments of the Committee also showed that the method of screening recommended by the Committee hereafter does not involve wide variations of the fields of visibility of the two types of light. With such method of screening, therefore, the advantages of one rule for oil and electric lights can be retained.‡

The Committee have thought it desirable to enquire into the practice of screening side-lights pursued in the Royal Navy. They find that the practice has not been changed in consequence of the present Order in Council, and that it is not governed by any principle which can be considered as certain. The rule appears to be§ that the screening of the side-lights is so regulated that the full light is clearly seen at a distance of 200 yards in the case of large vessels, and 150 yards in the case of small vessels, on a projected line of the ship's keel. It is obvious that, as on board men-of-war the side-lights are necessarily placed at very different distances from each other, the angle of screening in various cases must be very different; but it would seem that the result is to give an angle of screening in many cases less than four degrees from the outside of the wick. The practice, therefore, of the Royal Navy, while it adds further authority to the opinion that the side-lights should cross somewhere ahead of the ship, offers no material assistance in determining with precision the best angle of screening. But the Committee had the advantage of learning the opinion of four officers of the Royal Navy of great experience in practical navigation, and though they had not come to any exact conclusion as to the best angle of screening, they concurred in thinking an angle of four degrees too broad.‖ To the opinion of these officers the Committee attach great value.

The Committee are impressed with the importance of uniformity existing in the practice of other nations with that of Great Britain. They do not desire to express a decided opinion, but they cannot regard it as free from doubt, whether a direction to screen to four degrees from the outside of the wick might not be regarded by foreign courts of Admiralty as a contravention of the International Regulations. But they do not anticipate that such a result could follow the introduction of a direction to screen on a fore-and-aft line to the inside of the wick; on the contrary, they know of nothing in the past or present practice of other nations to prevent such a direction from obtaining general acceptance. Before the present Order it would appear that the Instructions of the Board of Trade were reproduced by other foreign nations, and that thus the principle of lights crossing before the bow of the vessel may be considered to have been generally approved. But in some cases further directions were given. The Swedish Regulations¶ were a translation of the English Regulations, but with the following addition: "The rays from the side-lights may be considered to cross "each other at a proper distance ahead of the vessel, and both lights to be seen only "from right ahead, if an imaginary line, drawn from the inner edge of the wick, "parallel with the midship line of the vessel is a tangent to the outer edge corner of "the screen": words which not only lay down principles of screening from the inner edge of the wick, but seem to place on the Board of Trade Instructions before the present Order an interpretation amounting to a direction to that effect. In Denmark** a rule was adopted of screening so that the rays crossed at a distance of a cable's length in front of the bow, an effect secured, it would seem, in the opinion of the authorities of that country, by a screening to the inner side of the flame. The Committee do not think it necessary to refer at length to the views expressed by foreign governments as to the present Order, but they notice that it has met with decided opposition from those of Denmark and the Netherlands,†† and they see no

* At 2,000 yards a 32 candle-power lamp was substituted for the 16 candle-power lamp used at the 2 miles range.

† Evidence of Captain Mensing, 3327 to 3333, and of Sir Digby Murray, 5093.

‡ *See* diagram, Appendix 23.

§ Question 5170, Appendix 14, No. 3.

‖ Evidence of Staff Commander Phillips, Questions 5186, 5194; of Commander Noel, Question 5241; of Staff Commander Edwards, Questions 5294–5; Staff Commander Keigwin, Question 5461.

¶ Parliamentary Paper, C.–6133, p. 110.

** Parliamentary Papers, C.–6255, p. 189, C.–6869, p. 138.

†† Parliamentary Paper, C.–6869, pp. 138, 140.

reason to doubt that a general agreement can be obtained on the basis of the screening they suggest more readily than on that directed by the present Order.

In view of the use, probably destined to increase, of electricity, the Committee thought it right to turn their attention to this mode of illuminating side-lights. The evidence before them appears to show that this mode of lighting is practically at least as regular and secure as that by mineral or vegetable oil. The Committee conducted some experiments with a view to ascertain whether a screening to the inner edge of the filament of an incandescent lamp produces similar results to those of screening to the inner edge of a wick, and they find that for practical purposes the effects may be considered as identical. But the Committee were impressed with the inferior appearance of the green light when equal candle power to that of the red light was employed, and it appears to them that, whether oil or electricity be used, a greater power should be employed in the green than in the red lamp. The Committee found that 16 candle power in the red, as against 32 candle power in the green, produces an excellent result. It further appears to the Committee that the masthead light should not be so powerful as to diminish the visibility of the side-lights. The Committee were also impressed with the importance of the best shade of green glass being employed, but they think further experiments directed to this point necessary to determine the exact shade which exhibits the most effective light. They think it desirable that the colour should be supplied by a separate glass placed within the lens.

The attention of the Committee was directed to the effect of a permanent list of a ship on the side lights. There is no doubt that, especially with particular cargoes, vessels do navigate with several degrees of list, and it was suggested that this, by altering the relative position of the flame in the lantern, would affect the amount of the rays thrown across the end of the screen. The Committee made some experiments on this point, with the result that they did not find the effect so marked as to necessitate any special rule on the subject.

In order that the screen should maintain a uniform position in relation to the wick, the Committee think it is of great importance that means should be taken to regulate the distance of the wick from the inboard face of the lantern. The Committee would suggest that to meet the cases of vessels of different sizes, several classes of standard lamps should be sanctioned, the distance of the inner edge of the wick from the inboard face of the lantern in each class of lamp being prescribed.

If side-lights are mounted in lighthouses, the Committee think that facilities should be provided by means of apertures in those structures for direct measurement from the wick to the centre of the ship, for the purpose of properly adjusting the screens.

The Committee have considered whether, in order to counteract the effect in widening the area within which the lights are seen ahead of wicks, or electric filaments, of unusual breadth, resort should be had to the discretion conferred by the terms of the Regulations of extending the length of the screen in such cases. But they are clearly of opinion that it would, for practical reasons, be highly undesirable to render it necessary to alter the length of the screen to suit different lamps. The same result can be obtained by dealing with the breadth of the wicks or filaments, and, in their judgment, all difficulty will be sufficiently met by directing that no wicks, or filaments (treating the breadth of filaments as that between the extreme edges of their curves), shall exceed two inches in breadth. It is probably not necessary to prescribe a minimum in the case of wicks, but the Committee consider that neither wicks nor filaments should be less than one inch or more than two inches in breadth when measured at right angles to the fore-and-aft line of the ship.

If the screens be placed as the Committee suggest, there is, of course, no objection to the lens embracing an angle of 120 degrees, as recommended by the Instructions of the Board of Trade,* the limitation of the full power of the light to two points abaft the beam being maintained by a proper construction of the lantern. We have no doubt that there are practical advantages in the lens being of this size.

Several members of the Committee have visited some of the principal ports of the kingdom in order to ascertain by personal observation the actual condition of lamps and their screening. The reports of these gentlemen will be found in the Appendix.† The Committee have arrived at the conclusion that the fixing and fitting of the screens, and the lights, both permanent and spare, require much more careful supervision than they have hitherto received.

* *See* App. 2, No. 1. † *See* App. No. 20.

The Committee desire to express their acknowledgments to the officers of the Board of Trade for the very able and candid manner in which they placed their information and opinions at the service of the Committee.

In conducting their experiments at Shoeburyness the Committee derived invaluable assistance from the Commandant, from Major Elmslie, and from the other officers of the Royal Artillery. They are also greatly indebted for the assistance rendered by Mr. Peter Samson of the Board of Trade. The experiments directed by the Committee were not intended to be exhaustive, but were selected in order to verify certain special points, and to form a basis of calculations. They were conducted with great care, and the Committee believe that the facts stated in the two reports in the Appendix may be taken as correct.

The Committee desire to express their obligations to their Secretary, Mr. Hipwood, of the Board of Trade. His acquaintance with the subject as well as his ability has been of the greatest service to them.

Our colleague, Captain Thomson, was rendered unable, by absence on service in the Mediterranean, to be present at the later meetings of the Committee, and at the experiments conducted by us. He has authorised us to append his name to the Report subject to any Memorandum he may desire to subjoin.*

In conclusion the Committee make the following recommendations, which are limited to the matters directly involved in the questions submitted to them :—

1. That the Order in Council of January 30th, 1893, be cancelled.

2. That in the case of oil lamps the forward edge of the screen, or chock on it, should be in a line parallel to the keel with the inside edge of the wick.

3. That in the case of electric lights there should be a similar screening in regard to the inside edge of the filament.

4. That the breadth of the wick or system of wicks of each oil lamp, and of the filaments in the case of the electric light, should be not more than two inches nor less than one inch, measured at right angles to the fore-and-aft line of the ship.

5. That the visibility of the green light should as nearly as possible be equalized to that of the red, by the employment of higher candle-power; and that the masthead light should not be so powerful as to diminish the visibility of the side-lights.

We have the honour to be,

Sir,

Your obedient servants,

(Signed) F. H. JEUNE.
H. G. ANDOE.
D. WILSON BARKER.
JAMES BOLAM.
JOHN S. CASTLE.
FRANCIS EVANS.
H. HUGHES HALLETT.
E. J. HARLAND.
THOMAS H. ISMAY.
THOMAS SCRUTTON.
A. S. THOMSON.

(Signed) C. HIPWOOD,
*Secretary.*

* Captain Thomson subsequently conveyed his intention not to subjoin any separate Memorandum.

RULE OF THE ROAD AT SEA.

# REPORT

OF THE

# COMMITTEE

APPOINTED BY THE

# PRESIDENT OF THE BOARD OF TRADE

ON THE

# SCREENING OF SHIPS' SIDE LIGHTS,

WITH

## MINUTES OF EVIDENCE AND APPENDICES.

## II.—Evidence, Appendices, and Index.

**Presented to both Houses of Parliament by Command of Her Majesty.**

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# MINUTES OF EVIDENCE.

## Wednesday, 27th March 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. THOMAS H. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

Mr. WALTER J. HOWELL called and examined.

*Mr. W. J. Howell.*
27 Mar. 1895.

1. (*Chairman.*) I think you are the principal clerk in the Marine Department of the Board of Trade?—Yes.

2. Will you kindly tell the Committee what is the nature and extent of your experience at the Board of Trade?—My experience at the Board of Trade has extended over a period of 20 years, almost entirely in the Marine Department. But I also served as private secretary to Sir Henry Calcraft when Permanent Secretary to the Board of Trade, and to Sir Michael Hicks-Beach when President.

3. Are you the officer in charge of the Marine Department?—No. Mr. Ingram Walker is the Assistant Secretary in charge of the Marine Department, but I regret to say he has met with an accident and is unable to appear before the Committee to-day. I am here in his place, to give every information in my power on his behalf to the Committee.

4. Will you tell the Committee what are the duties of the Marine Department with regard to ships' side lights?—To see that the regulations made by Order in Council under the provisions of the Merchant Shipping Act, are complied with, and to prosecute, wherever practicable, in cases of infringement.

5. In what way do the Board of Trade secure compliance with the regulations respecting side lights?—By instructions to their Surveyors, which will be put in, and explained to the Committee by Sir Digby Murray, the professional officer of the Marine Department, and by other members of the technical staff.

6. Can you give the Committee any information with regard to the steps which have led up to the adoption of the present system of side lights?—The want of a uniform system of night signals for steamships was commented upon in the Reports of a Select Committee of the House of Commons on Steam Navigation in 1831,* and of a Royal Commission on Pilotage in 1836;† but the adoption of side lights, so far as I have been able to ascertain, was not suggested until 1839.‡ In that year the Board of Trade instituted an inquiry into: "1. The number and nature of the "accidents which have happened in steam vessels "within the last ten years as far as they can be "ascertained; 2. The practical means of preventing "the recurrence of accidents." The result of this inquiry was a report, stating that almost every imaginable variety of light was in use on steam vessels, and that collisions commonly arose from the absence of an universal understanding as to the "rule of the road" to be observed by vessels, in meeting and passing each other, and from the absence of an universal system of night lights or signals.

7. Was there any definite recommendation on the subject of side lights made in the report to which you are referring?—Yes. I will read an extract from the report dealing with the matter:—"In order to diminish "the frequency and danger of collisions, and being "convinced of the necessity for establishing a de- "finite 'rule of the road,' and an uniform system of "signals, for the government of steam vessels, we "should have introduced into the foregoing outline "distinct provisions on the subject, had it not been "that a measure of this kind has been advised in "the report of the 'Commissioners appointed to in- "'quire into the Laws and Regulations relating to the "'Pilotage of the United Kingdom,' to be incor- "porated in a new pilot Act. Referring, however, "to the tenor of our instructions as to 'the nature of "'the accidents in steam vessels,' and to 'the means "'of preventing them,' and on a review of the valu- "able information supplied to us on this head, we "cannot avoid recommending the adoption of a "system which has for so many years been found "practically efficient, against which no objections have "hitherto been urged, and which has met the con- "currence of so numerous a body of steam navigators. "The system we advise is:—1. As to the 'rule of "'the road.' That steam vessels approaching and "passing each other should *starboard* their helms, "with the view of keeping on the starboard side of "each other, respectively as far as practicable. 2. As "to night signals. The want of an uniform and "sufficient system of lights has been so fruitful a "source of collision and injury that we recommend a "system similar to that now practised by a numerous "class of commanders of private steamers, and which "has been substantively approved of and adopted by the "commanders of Her Majesty's steam packets at Liver- "pool, viz., that in all *sea-going* steam vessels there be "a *white* light at the foremast head, visible in clear "weather from 8 to 10 miles; a *white* light attached "to the forepart of the *starboard* paddle-box which "can be seen six miles in clear weather, and a third "light which is *red* attached to the fore part of the "*larboard* paddle-box visible about three miles. The

* [illegible]
† Page 13 of the Royal Commission's Report.
‡ H.L. 181 of 1839. Report on Steam-vessel Accidents.

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" three lights can only be seen at one and the same " time when right ahead, or nearly so; in any other " position before the beam two only are visible, and " their colours define the position of the vessel. " 3. That the obligation to carry some powerful " steam-whistle, bell, or gong, be part of the proposed " law as regards steam vessels; also that their rate " through the water be defined during fog and thick " weather, in crowded waters, whether plying by day " or night. It is also obvious that some regulations " are essential to determine the nature, and enforce " the carrying of lights in river steamers, sailing " vessels, and vessels at anchor."

8. (*Sir E. Harland.*) What is the date of that?—1839.

9. (*Sir E. Harland.*) Then the starboard light was at that time white, not green?—Yes.

10. Did any legislation on the subject follow immediately?—Apparently not. The next step appears to have been the passing of an Act in 1846,* to regulate steam navigation. Section 10 of that Act empowered the Admiralty to make regulations for the exhibition of lights by steam vessels; and I have here an Admiralty paper of 1847 dealing with the exhibition of lights.†

11. (*Chairman.*) This refers to the first exercise by the Admiralty of their statutory power?—I believe so.

12. (*Sir E. Harland.*) Is it mentioned when the green light was first used?—The starboard light referred to in the paper of 1847 is a green light.

13. (*Chairman.*) What paper are you reading now?—The paper I have just referred to is an Admiralty paper which was issued in 1847, after the passing of the Act of 1846. I think I had better read the whole of it. It is dated December 13th, 1847:—" The " great increase in the number of steamers, and the " want of an adequate and uniform plan of lights, has " of late years occasioned an infinity of accidents from " vessels running foul of each other in the night, " involving, not only a serious destruction of valuable " property, but also a melancholy loss of human life, " and without the most diligent and attentive con- " sideration, as to the best plan to be adopted to " obviate such disasters, the evil is likely to increase. " To nautical men it will readily appear that the " generality of the accidents alluded to, is attributable " to the want of means to ascertain promptly the " direction in which a vessel may be steering, at " the moment she is first discovered, at night; for " when a ship's light is first perceived in a dark " night, the observer is merely informed that there is " a vessel in the direction of that light, but he is still " ignorant of the course she may be steering. He " has no means of ascertaining immediately (what is " all important at this critical moment) whether the " strange sail may be steering directly towards him, " or whether she may be standing in some direction " across the bows either to starboard or to port. In " this doubt, the helm is frequently put the wrong " way, and a collision is the consequence; but another, " and perhaps the first and most important point to " determine is, whether the light when seen, is that of " a steamer, and if so, whether she is under weigh. " Here, then, is a palpable defect in every mode of " night signals hitherto adopted—the evident source " of frequent damage and loss of life. To remedy " this deficiency, nothing more would appear to " be required than that the same light which " announces the approach of a vessel in the dark, " should not only indicate that it is a steamer, and " under weigh, but should also point out the direction " of her head. With a view to supply this great " desideratum, the following is the plan intended to " be generally adopted." I put in the diagrams ‡ issued with this paper of 1847, which show that the plan to be adopted consisted of a white light at the foremast head, with a green light on the starboard bow, and a red light on the port bow. The paper goes on to say:—" The manner of fixing the coloured " lights should be particularly attended to. They " would require to be fitted, each, with a screen of " wood or canvas on the inboard side, in order to " prevent both being seen at the same moment from " any direction but that of right ahead. This is " important, for without the screens (a principle first " introduced with this plan) any plan of bow lights " would be ineffective as a means of indicating the " direction of steering."

14. (*Chairman.*) Then what was the next step?—In July 1848 the Admiralty, under the powers conferred upon them by the Act of 1846,* to which I have just referred, issued an order laying down what lights should be carried by steamers in order to prevent collision. This order was published in the London Gazette of July 11th, 1848. Omitting the preamble, the order is as follows: " We hereby require, in " pursuance of the said Act, that lights shall be " exhibited by all steam vessels, except in the River " Thames above Yantlett Creek, between sunset and " sunrise, of such description and in such manner as " herein-after mentioned, that is to say:—When under " weigh: 1. Bright white light at the foremast head. " 2. Green light on the starboard side. 3. Red light " on the port side. When at anchor a common bright " light. The following conditions to be observed, viz.: " 1. The masthead light to be visible at a distance " of at least five miles in a clear dark night, and the " lantern to be so constructed as to show a uniform " and unbroken light over an arc of the horizon of 20 " points of the compass, viz., from right ahead to two " points abaft the beam on each side of the ship. " 2. The coloured side lights to be visible at a " distance of at least two miles in a clear dark night, " and the lanterns to be so constructed as to show a " uniform and unbroken light over an arc of the " horizon of 10 points of the compass, viz., from right " ahead to two points abaft the beam, on their " respective sides. 3. The side lights to be moreover " fitted with inboard screens, of at least three feet " long, to prevent them from being seen across the " bow. The screens to be placed in a fore and aft " line with the inner edge of the side lights. 4. The " lantern used when at anchor to be so constructed as " to show a good light all round the horizon."

15. Then what was the next enactment?—The Consolidation Act of 1851† provided that the Admiralty " shall from time to time make regulations requiring " the exhibition of such lights, by such classes of " vessels, whether steam or sailing vessels, within " such places and under such circumstances as they " think fit, and may from time to time revoke, alter, " or vary the same . . " The regulations issued by the Admiralty under this Act on the 1st May 1852 do not differ materially from those issued in 1848. The requirements as to steam vessels' lights are as follows: " All British sea-going steam vessels (whether " propelled by paddles or screws) shall within all seas, " gulfs, channels, straits, bays, creeks, roads, road- " steads, harbours, havens, ports, and rivers, and " under all circumstances, between sunset and sunrise, " exhibit lights of such description, and in such " manner, as herein-after mentioned, viz.:—*When* " *under steam.* A bright white light at the foremast " head; a green light on the starboard side; a red " light on the port side. 1. The mast head light is " to be visible at a distance of at least five miles in a " dark night, with a clear atmosphere, and the lantern " is to be so constructed as to show a uniform and un- " broken light over an arc of the horizon of 20 points " of the compass, being 10 points on each side of the " ship, viz., from right ahead to two points abaft " the beam on either side. 2. The green light on the " starboard side is to be visible at a distance of at " least two miles in a dark night, with a clear atmos- " phere; and the lantern is to be so constructed as to " show a uniform and unbroken light over an arc of " the horizon of 10 points of the compass, viz., from

* 9 & 10 Vict. c. 100. † H.C. 696 of 1851, pp. 31 and 32.
‡ *See* Appendix 1, No. 1.

* 9 & 10 Vict. c. 100. † 14 & 15 Vict. c. 79. s. 26.

" right ahead to two points abaft the beam on the " starboard side. 3. The red light on the port side " is likewise to be fitted so as to throw its light the " same distance on that side. 4. The side lights are " moreover to be fitted with screens, on the inboard " side, of at least three feet long, to prevent the lights " from being seen across the bow."

16. What was the next statutory provision with regard to ships' lights?—The provisions empowering the Admiralty to make regulations as to lights were re-enacted in section 295 of the Merchant Shipping Act of 1854, and revised regulations were issued by the Admiralty and published in the London Gazette of 5th March 1858.

17. Do these regulations of 1858 differ materially from the regulations of 1852 so far as the side lights of steam vessels are concerned?—No, but the rule as to the fitting of the screen is worded differently. The regulations of 1858 provide: " 4. The side lights are " to be fitted with inboard screens projecting at least " 3 feet forward from the light, so as to prevent the " lights from being seen across the bow."

18. The provisions of the Act of 1854 were repealed, were they not, by a subsequent Merchant Shipping Act?—Yes, the section to which I have referred was repealed by the Merchant Shipping Act, 1862. Section 25 of this Act provided a set of regulations which became, by section 27, binding on owners and masters of ships. The regulations contained in the schedule to this Act of 1862 are practically identical, so far as screening is concerned, with those issued by the Admiralty in 1858. Section 25 of the same Act conferred power upon Her Majesty (on the recommendation of the Admiralty and the Board of Trade) by Order in Council to alter or add to such regulations, and this power has been frequently exercised.

19. That was the first time, was it not, that the Board of Trade was brought into play with regard to that matter?—Yes.

20. Up to that time the duty had been entrusted to the Admiralty and the regulations were framed by the Admiralty?—Quite so.

21. Has any alteration been made in the Regulations for Preventing Collisions at Sea, so far as screening is concerned, since 1862?—None whatever until the issue of the Order in Council of the 30th January 1893, which Sir Digby Murray will put in and explain.

22. The Board of Trade have no doubt issued definite instructions to their surveyors from time to time with regard to screening ships' lights?—Yes. In March 1868, the attention of the Marine Department was called to the want of uniformity that existed on the subject, and they consulted with the Admiralty and the Trinity House. The correspondence was printed in a House of Commons Return, No. 114 of 1869. The result was the issue of instructions by the Board of Trade to their surveyors in September 1868.*

23. It was one of the surveyors who called the attention of the Marine Department to the subject?—Yes.

24. The correspondence took place between the Board of Trade and the Admiralty and Trinity House?—Yes.

25. (*Chairman.*) Have you the Board of Trade letter to the Trinity House?—Yes.

26. (*Chairman.*) There is a passage in the conclusion of Mr. Thomas Gray's letter which I think the Committee would like to hear as it really gives a summary of the whole?—Yes. The passage is as follows:—" The real points appear to be: first, to " insure that the red and green rays do not cross each " other immediately on leaving the ship, nor at all, " more than is possible. Secondly. To insure that " the distance ahead, within which neither light is " seen, is not greater than can be avoided. The " Board of Trade will be obliged if the Elder Brethren " of the Trinity House will favour them with their " observations and advice on the points raised."

* See Appendix 1, No. 2.

27. (*Mr. T. Scrutton.*) May we know how that question first arose?—It was raised by one of the Board of Trade surveyors, Mr. Macfarlane Gray.

28. Is the paper to be handed in?—Yes.

29. (*Mr. Ismay.*) If I remember rightly it was in a letter from Mr. Macfarlane Gray, who found that the lights were not uniformly screened?—That was so.

30. (*Chairman.*) Here is the whole thing in this return to the House of Commons.* We have here the whole correspondence, and I am sure that the Committee would like to see certain parts of it. Perhaps you will read Mr. Macfarlane Gray's letter, because that really was a summary of what was passing through the mind of a Board of Trade surveyor at that time?—The letter is dated 13th March 1868, and is as follows:—" In discharging my duties as Inspector " of Lights, I find that there is not that uniformity in " the practice of your surveyors which I believe you " expect; and although I have had some confidence " in carrying out the instructions as I have under- " stood them, that confidence is now changed into " uncertainty, and I have, therefore, to ask for " definite instructions upon the following points:— " 1st question. Regulations for preventing collisions " at sea, &c. Articles 3 (*b*) and (*c*), 'So fixed as to " 'throw the light from right ahead to two points " 'abaft the beam.' (*d*) 'Screens so as to prevent " 'these lights from being seen across the bow.' " These two clauses give different measures for the " angles of light, and I find every variety of it from " Fig. No. 1 to Fig. No. 2, if not even a wider " range."

31. The regulations Mr. Macfarlane Gray had before him were those contained in the Act of 1862, but they were practically identical with the Admiralty regulations we have heard just now?—Yes. And these regulations, so far as they affect screening, have not been altered by one word since they were first published in the Act of 1862. The letter goes on:— " Mr. Gray's Mnemonic Rhymes say:—

> " When both side lights you see ahead,
> " Port your helm and show your red.

" Now with lights as in Fig. 1 the vessel may " have run into you, and still the three lights are " seen. Fig. No. 1 is the general arrangement. " With lights as in Fig. No. 2, which I think is right, " so long as you see three lights there is a chance of " steering clear. The Holyhead mail boats are as " Fig. 2; I found them so, and I have altered several " vessels to that, but I find the 'Leda,' surveyed in " London, is as Fig. No. 1, and I have therefore " stopped altering any more until I have further " instructions. According to the present instructions, " a vessel may not show three lights in any position, " for right ahead at the two sides are parallels which " would never meet. Between that and converging " at the bowsprit is, I think, a wider range than was " intended; and I can conceive several inconveniences " with lights as in Fig. 1, if lights as in Fig. 2 " are also permitted. 1st. Let a steamer A., as Fig. 1, " meet a steamer B., as Fig. 2. A. sees B., a green " light right ahead; A. starboards, and brings the " green light on his starboard bow, and the vessels " approach each other; A. has not shut his red to B., " only shaped a clear course. B. for the first time " sees A., now half point on his starboard bow, and if " he did nothing he would be safe, but he sees three " lights meeting him only half a point to starboard; " to him in a dark night, seeing no vessel but only " the lights, there is evidently risk of collision; he " ports and thereby fouls the other vessel. Here A.'s " arc of three lights is so broad that it exceeds the " angle which the captain thinks sufficient to clear " the other vessel. This can never happen in a " channel unless against rules. Here the error is " increased by each captain supposing the other " vessel's lights to be the same as his own. 2nd. " With lights, as in Fig. 1, 'passing vessels' would

* H.C. 114 of 1869.

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" often be mistaken for meeting vessels,' and although " they would have cleared each other, 'green-to- " green,' they would be brought out of their safe " courses into positions of greater danger, crossing " each other's bows to bring 'red to red.' Here we " have both danger and inconvenience, and un- " necessary interference with the courses of the " vessels. 3rd. With lights, as in Fig. 1, the arc " of three lights is an arc of doubt, and a captain " watching the other lights to see on which side he " is, is kept too long in suspense, not as to what he " should do, but as to whether the other vessel is " doing what they should do. With lights, as in " Fig. 2, there is but an instant between red or green, " and the whole of the time is available for steering " clear of each other. If within the black triangle it " does not matter where they put the helm. I have " no right to give an opinion on this subject. I have " believed Fig. 2 to be right, that is to make the " lights converge to an angle not more than half a " point, that is, the length of the triangle to be 10 " times the base, and I have given the above reasons " for my having done so; if I am in error I will get " the vessels altered at once."

32. (*Sir E. Harland.*) This is still Mr. Macfarlane Gray's answer to his own question?—No, that is the first question.

33. He first put a question and now he has been answering it?—He says what he thinks is right.

34. (*Chairman.*) Mr. Macfarlane Gray evidently thought the alternatives were between crossing actually at the bow and crossing at a certain distance which he puts, I think at 10 times the distance between the lights themselves; these he seems to consider the only two alternatives, and evidently he was perplexed between them. Then Mr. Thomas Gray on that wrote to the Trinity House, and we have had the way he put it, that the real points appear to be, first, to insure that the red and green rays do not cross each other immediately on leaving the ship, nor at all more than is possible; and secondly, to insure that the distance ahead within which neither light is seen is not greater than can be avoided. It is not very easy to reconcile the two points; in fact, some people would say they were directly contradictory. Now for the Trinity House answer?—On the 8th April 1868, the Trinity House wrote acknowledging the Board of Trade's letter, and saying—" In reply " thereto I am to state that it appears to the Elder " Brethren that without going into all the surveyor's " details, which are somewhat confusing, the question " is a practical rather than a theoretical one. On the " first point raised I am to state that it appears to " the Elder Brethren that it would be manifestly " impossible to fix upon any spot where the rays of " the side lights should or should not meet, and that " although the breadth of the ship would intervene if " the rays were carried ahead with mathematical " precision (an operation which it is difficult with " even the most accurate optical apparatus to carry " out), such precision could not be attained, even " with the proper 3-feet screens, in such lights as " are in general use; and that, as therefore there is a " dispersion of light which does cover the intervening " space of the breadth of the ship, practically the " three lights are seen together. I am to add that it " must be also remembered that the lights are not " seen from a point, but from a vessel of like condi- " tions, and when the observer is master of a like " space; and that the Elder Brethren are therefore of " opinion that the lights to be placed in accordance " with the regulations, should throw their central ray " on a line parallel with the keel and with the inboard " screen." The rest of the letter deals with the mast head light.

35. I do not think that up to this time there had been any order issued prescribing the use of a screen with regard to either edge of the wick?—I think not.

36. (*Sir Edward Harland.*) You have already given us the Admiralty regulation with regard to the screen being on the inner side of the lamp?—Yes, the regulation was at this time contained in the schedule to the Act of 1862.

37. (*Chairman.*) Now will you take next the instructions which the Board of Trade issued in consequence?—The result of the correspondence was that the Board of Trade issued definite instructions to their surveyors; and these instructions are dated September 1868, and are printed in the parliamentary paper from which I have been reading.* Sir Digby Murray will deal in detail with the instructions; but I should like to call the attention of the Committee to the following passage, which seems to me to have an important bearing upon the question at issue:—" If the " surveyor finds that the red and green rays cross " each other, he should of course have the defect " remedied at once. There are many ways of doing " this; for example, the screen may be lengthened; or " another board may be placed outside it (Fig. 4); or " a chock (equal in thickness to the distance between " the inner edge of the lens and the side of the " screen) may be secured to the fore end of the screen " (Fig. 5); or the lamp may be so placed that the " outside of the screen will come against the inner " edge of the lens (Fig. 6); or the screens may be " so placed that the distance across the ship between " their outer sides, at the fore end, shall be equal " to the distance between the inner edges of the " lenses of the two lamps (Fig. 7). If the red and " green rays cross each other immediately on passing " the stem, the red light will be seen on the starboard " bow, and the green light on the port bow, as shown " in Fig. 8; but, on the other hand, if they do not " cross, at least to a slight extent, then they cannot " both be seen ahead. The real points to be studied " in fixing and arranging the inboard screen appear " to be:—First, to insure that the rays of the red and " green side lights do not cross each other immediately " on leaving the ship, nor at all more than is possible; " and secondly, to ensure that the distance ahead " within which neither light is seen is not greater than " can be avoided."

38. Have any further instructions been issued to the Board of Trade Surveyors?—Yes, from time to time, and these Sir Digby Murray will put in and explain. I should, however, wish to say at once that the 4° angle of screening was first definitely laid down by an instruction in 1892. The reasons for the issue of this instruction will also be explained by Sir Digby Murray and other technical members of the staff of the Department.

39. The 4° rule excited considerable opposition, did it not?—Yes, and that opposition has been continued to the present time, and has, in fact, led to the appointment of this Committee. The Order in Council of the 30th January 1893, to which I have already referred, was obtained for the purpose of setting at rest questions which had been raised by shipowners as to the binding nature of the Board's regulations.

40. Have you any other papers to lay before the Committee on the legal aspect of the question?—Yes, with your permission I will put in the following papers:—1. Case laid by the Liverpool Steam Shipowners' Association before Sir Walter Phillimore and Mr. Joseph Walton, Q.C., with their opinions thereon; and 2. Case laid by the Board of Trade before the Law Officers of the Crown, (Sir Charles Russell, and Sir John Rigby) with Sir Richard Webster, Mr. F. W. Raikes, Q.C., and Mr. Sutton, with their opinions thereon.†

(*Mr. Ismay.*) What are the dates of those?

(*Chairman.*) Sir Walter Phillimore's is April 22nd, 1893, and the Law Officers' the 12th August 1893.

(*Mr. Ismay.*) The opinion of the Law Officers followed the other opinion?

(*Chairman.*) Yes.

* H.C. 114 of 1869.

† *See* Appendix 1, No. 3.

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41. Has not the subject of screening ships' lights been dealt with by a previous Departmental Committee?—It has. That Committee consisted of the following gentlemen:—Sir Charles Hall, as Chairman; Sir Courtenay Boyle; Captain W. C. Angove, of the Peninsular and Oriental Steam Navigation Company; Captain Holland, R.N.; Admiral Sir Robert Molyneux; Sir Digby Murray; Sir George Nares, of the Board of Trade; Mr. William Watson, of the City of Dublin Steam Packet Company; Captain C. G. Weller, of the Trinity House; and Captain Wharton, R.N., Hydrographer to the Admiralty. It reported in December 1893, and I will put in a copy of the report.*

42. (*Sir E. Harland.*) Has the opinion of the Law Officers been given?—I put that in.

43. (*Mr. Scrutton.*) Is the schedule to the Order in Council of January 1893 the work of a committee, or the work of an individual?—I think it was drafted at the Board of Trade after consultation with eminent lawyers and with the professional officers.

Sir DIGBY MURRAY called and examined.

*Sir Digby Murray.*

44. (*Chairman.*) I need hardly ask you your qualifications and position. Perhaps you will shortly say what they are?—I am professional member of the Marine Department of the Board of Trade, and have been employed there since January 1873.

45. There is a matter to which you think it desirable to call attention before going into the more immediate question connected with these side lights, and that is as to the condition of the law as regards the statutory power, or the absence of the statutory power of the Board of Trade with reference to side lights?—I think it has a bearing upon the subject.

46. The Board of Trade, I think, have no power to insist on anything connected with the lanterns, except that they shall be of such a character and so fitted as to comply with the International Regulations?—That is so.

47. Then they have no power, for example, have they, to insist upon the character of the lamp, the description of the lens, the vertical divergence above or below the horizontal plane, or the position of the wick inside the lantern. All those are matters they have no power to prescribe?—They are really only recommendations on the part of the Board of Trade. They have no power to insist upon them.

48. In fact, their one power is to interfere when the side lights do not show in the manner, or at the distance, required by the Regulations?—Yes, but the defects must be obvious. Otherwise the Board of Trade Surveyor would have very great difficulty in proving them

49. Of course, it could only be done by experiment?—Yes, and that would be impracticable except in a few isolated cases.

50. I think the matter has engaged the attention of the German Lloyd, has it not?—Yes.

51. And they have commented upon the numerous patterns of the side lights?—That is so.

52. Has the divergence of character in the nature of the lights had any effect on the question of screening to any required angle?—Yes, it has every bearing upon it. You take one pair of side lights and screen them to any angle you may think proper. If one of those lights is broken or shifted, or replaced by another set of lights, the angle of screening would be quite different.

53. I suppose it may be even taken that a vessel often ships a second set of lights of somewhat different character to the others?—Yes, and in some cases which have come under observation, as many as three pairs of lights have been on board a ship, all of them screened to different angles.

54. I think the Board of Trade have always, had two things before their minds, have they not? First, that the Regulations as to side lights appear to require the full volume of light to be seen ahead; and also that both side lights shall be visible when two vessels are meeting end on, or nearly end on?—That has always been the Board of Trade interpretation of the Regulations.

55. I think when we come to go into the diagrams and experiments we shall be able to look a little more closely into the questions which bear upon those two views as to what is requisite. Now, will you kindly state to the Committee what were the suggestions of the Board of Trade to surveyors as to the screening of side lights from 1868 up to the issue of the new rules in 1892?—The suggestions and accompanying diagrams were to the effect that a line drawn parallel to the keel from the inner edge of the lens would indicate the depth of chock necessary to cause the light to cross suitably.

56. Could you tell me when was the first suggestion or instruction by the Board of Trade, which referred to a line being drawn with relation to the inner edge of the lens or wick?—In 1868.† The diagrams issued with the Instructions of 1868 were never altered up to 1892.

57. You have been kind enough to place in my hands a circular sent to surveyors by the Board of Trade in September 1868?—Yes.

58. I observe that they are issued after consultation with the Admiralty, and with the Elder Brethren of the Trinity House. The last witness has been good enough to give us the correspondence that had passed?—That is so.

59. I observe that the first matter one should notice is this:—"Seventhly.‡ The regulations require "that the coloured side lights shall be fitted with "inboard screens projecting *at least* 3 *feet forward from the lights.* Care must be taken that "the screens are 3 feet long, or such greater "length as the position of the light with regard to the "screen and its distance from the head of the vessel "may render necessary. The surveyor would do "well to observe the effect of alterations in the "distance of a side light from its inboard screen. "He should also bear in mind that if the lantern is "placed at a few inches outside an ordinary straight "screen of 3 feet in length, or even against such "a screen, the rays of light will be found to cross "the end of the screen so as to be visible to a vessel "approaching upon the opposite bow." (*See* Fig. 3.) "If the surveyor finds that the red and green rays "cross each other, he should, of course have the "defect remedied at once. There are many ways of "doing this. For example: the screen may be "lengthened; or another board may be placed outside it (Fig. 4); or a chock (equal in thickness "to the distance between the inner edge of the lens "and the side of the screen) may be secured to the "fore end of the screen (Fig. 5); or the lamp may "be so placed that the outside of the screen will "come against the inner edge of the lens (Fig. "6); or the screens may be so placed that the "distance across the ship between their outer sides "at the fore end shall be equal to the distance "between the inner edges of the lenses of the two "lamps" (Fig. 7)?—That last is the same thing, only in other words.

60. "If the red and green rays cross each other "immediately on passing the stem, the red light will "be seen on the starboard bow and the green light "on the port bow, as shown in Fig. 8; but, on "the other hand, if they do not cross, at least to a "slight extent, then they cannot both be seen ahead. "The real points to be studied, in fixing and arranging "the inboard screen appear to be: first, to ensure that "the rays of the red and green side lights do not cross "each other immediately on leaving the ship, nor at all

* *See* Appendix 1, No. 4.
† *See* Appendix 1, No. 2.
‡ H.C. 114 of 1869, p. 12. *See* Appendix 1, No. 2.

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"more than is possible; and secondly, to ensure that "the distance ahead within which neither light is "seen is not greater than can be avoided." Now that expresses the principle which from first to last has been before the mind of the Board of Trade?—Yes. The diagrams which illustrate the matter were never altered until 1892; they were then altered on my recommendation.

61. I think you were going to explain that there had been some mistake made in 1879 with regard to a confusion between the word "wick" and the word "lens"?—Yes, and I would ask you to alter it to 1875. I may say that these instructions are out of print, and it has been difficult for me to get copies of them, and when I asked for all the previous instructions they were sent to me without the re-issue in 1875, and I find that that mistake occurred in the first place in 1875. I presume I need not allude to the instructions of 1872, which are identical with those of 1868.

62. Were these instructions of 1868 repeated in subsequent years?—Yes, in 1872 they were, and they have practically been repeated up to 1892, with the exception of the error to which I am about to call your attention. You will observe in the first place that this paragraph in the Instructions of 1875, to which I call your attention, is perfectly correct.

63. I will read it, with the Committee's permission:—"Or a chock equal in thickness to the "distance between the inner edge of the lens and "the side of the screen may be secured to the "fore end of the screen, or the lamp may be so "placed that the outside of the screen will come "against the inner edge of the lens"; so that the word in both cases is "lens"?—But in the next paragraph you will see the word "wick" has been substituted for the word "lens."

64. Later on in these same Instructions of 1875 occurs this passage: "For both lights to be seen ahead it is "necessary that the red and green rays should cross at "a certain distance ahead. Surveyors will probably find "that if the inboard edge of the *wick* touches a line "parallel with the keel of the ship, and that cuts "the outer edge of the forward end of the inboard "screen, the rays will cross suitably." Then was that a mere misprint?—It was entirely a misprint, as is shown not only by the former passage, but also by the drawings, which are exactly the same as they were before. It is a misprint for the word "lens."

65. The intention was that it should be the edge of the lens that should regulate the depth of the chock and not the edge of the wick?—Yes; if it was regulated from the inner edge of the wick, the screening would be remarkably fine; in the case of a 1-inch wick, placed at right angles to the ship's keel, it would give an angle of 1° 35′, but if the wick was placed parallel with the chord of the arc, which is of the two more frequently the case, the angle would be 1° 16′.

66. Then when was the error corrected?—It was not corrected until 1887. It never came under the notice of anybody. The clerk who ought to have read it and compared it seems to have overlooked it.

67. The view the Board of Trade took was that this was a mistake, and they acted upon it by remedying it, as I understand, in 1887?—Yes. I may say that the Board of Trade Surveyors have always construed it as if it were the inner edge of the *lens*, not the edge of the *wick*. In the Instructions of 1887 you may see that the line drawn from the inner edge of the lens to the outer edge of the chock is called the line of reference. In the Instructions of 1891, which were the next, this line is printed in the same way as the line of reference.

68. And I see in both cases the line of reference is a line from the edge of the chock to the edge of the lens?—From the inner edge of the lens to the chock.

69. So that those diagrams clearly show that the inner edge of the lens is intended and not the inner edge of the wick?—Yes, and you will see that the earliest diagrams—those of 1868—were never altered until 1892.

70. Were the same instructions worked upon both in 1887 and again in 1891?—Yes.

71. Were those instructions the instructions in force up to the recent alteration in them which is really now in question?—Yes, until 1892.

72. Perhaps you will kindly read to the Committee the instructions of the Board of Trade which are now in force?—"Side lights are always to be "screened to an angle of 4°, and are to be fitted "as follows, excepting when in turrets, in which case "it may be thought desirable so to arrange the "screens as to dispense with chocks, *see* Plate 1. "When the screens are fitted as in Figs. 3 and 4, "Plate 2, the outer wall of the screen is to be con-"sidered as the chock."* And then there is a drawing which shows exactly how they are to be screened.

73. Can you state to what angle the lights would be screened from the outer edge of the wick if the suggestions contained in the *old* Instructions had been complied with by the surveyors?—The mean in the case of lamps of the patterns in use prior to 1892 would be 4° 30′.† I put in a list of a number of measurements which were taken. The measurements were made by myself, and perhaps it would be convenient to you, either now or presently, for me to show how those measurements were made. There is a diagram here which shows it.

74. I think it would be convenient at the present moment. (*A diagram was produced*)?—The measurements in each case were taken from the inner side of the lantern to the outer edge of the wick. Subsequently to that the measurement was taken from the inner side of the lantern to the inner edge of the lens. Then this latter measurement was deducted from the larger measurement, and the difference was of course the tangent of the angle.

75. (*Sir F. Evans.*) The tangent of the angle at what point?—The tangent of the angle corresponding to a length of screen of 36 inches.

76. (*Sir E. Harland.*) Is that with the object of setting off the thickness of the chock?—Yes, the diagram shows the depth of chock required for angles of from 1° to 4°, but this particular depth of chock corresponds to a screening of 4°.

77. (*Mr. Ismay.*) According to the present practice?—The angle, yes; but the position of the wick is not in accordance with the present practice, because we now suggest that the centre of the wick shall be the centre of the curvature of the lens. We had a little trouble about it, for some makers set back the wick, without altering the construction of the lamp.

78. (*Chairman.*) I think it is your opinion, is it not, that the effect of this rule as to 4° in point of fact has decreased and not increased the actual angle of screening?—Yes, that is actually the case. I put in a statement prepared by the Secretary of the Rule of the Road Committee, which shows what has actually been the effect of the 4° rule.

79. It is in your view, is it not, undoubtedly the case that the angle before 1892 was a larger angle than 4°?—There is no doubt about it. I shall be able to put further evidence before you to show that that was the case.

80. Does this summary of the reports from the various districts, which you have put in, show that the angle was never less than 4°, though in many cases it appears to have gone up to as much as 10°?—No, the angle has been less than 4° in some cases, but in the majority of cases it has been either 4° or over. There are a number of measurements given in another paper which I propose to put in and they show that the angle has been smaller than 4° in some cases. On the other hand it appears from a return which was handed in to the Rule of the Road Committee by the marine superintendent of the Peninsular and Oriental Company that in 80 per cent. of their vessels the lights were screened to 4° or over, prior to their being rescreened in accordance with the 1892 Instructions.

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* *See* Appendix 2, No. 1.
† *See* Q. 4920, 5057-9.

81. I think also you have one of the printed forms showing the information the Board of Trade desired from the Superintendent of Experiments at Shoeburyness, as to the side lights showing a uniform and unbroken light in colour, and power over 10 points of the compass?—Yes. That was one of the questions that we have always asked the Director of Experiments until quite recently. During the time that we issued printed forms to be filled up that was one of the questions which was invariably asked.

82. I should like to ask at once upon this, what you understand by the meaning of the words "right ahead?" Do you mean right ahead of the vessel or right ahead of the light?—I mean right ahead of the keel of the ship, and in conducting experiments at Shoeburyness we have nearly always stood upon the middle line to witness them; there is a middle line which is staked out for a distance of some two or three miles, certainly for over two.

83. You do not mean by "right ahead" actually at the bow; you mean right ahead at some distance?—At some reasonable distance from the ship, not close to the ship.

84. The regulation says that there must be a uniform and unbroken light of 10 points from right ahead. What exactly do you understand that to mean?—From right ahead of the ship to two points abaft the beam; that has always been my reading of it.

85. Taken on the horizon or at the bow of the ship?—I mean that if, for instance, you are two miles distant from the ship, you ought, provided it is clear enough to see the light, to see the same volume of light ahead of the ship as you would on any other bearing.

86. Down to the two points abaft the beam?—Yes.

87. Then I should like to ask, what do you understand by the phrase "across the bow?" Do you understand by that crossing the actual bow of the ship, or crossing the line of the keel at some distance ahead of the ship?—At one time I was of opinion, as I have stated in one of the papers, that it meant across the path of the ship, but on further consideration I have come to the conclusion that it always meant the bow of the ship herself, and I will tell you why. The screens, by the regulations, are required to be 3 feet in length; it would be absurd to suppose a screen 3 feet in length would prevent the light from crossing the path of the ship. If you had a screen 500 feet in length it would not prevent some rays of light passing at some angle. It is perfectly impossible to do it with any length of screen. You can do it with a chock, but there is nothing in the regulations about a chock.

88. It may be done by the screen being placed askew may it not, and there is nothing to show that the screen need be parallel to the keel of the vessel?—Yes, we have shown in one of the diagrams you have before you that it may be done, if you think it proper, by placing the screen askew.

89. By the use of the screen, apart from the use of the chock, it would be possible, would it not, to prevent any rays of light being seen anywhere across a line projecting from the line of the keel?—Yes, the screen then would not be parallel to the keel. Of course it would be askew. I think there are three models at this present moment in the Museum at at South Kensington, one, I think, of H.M.S. "Northumberland," showing the screens as they were formerly fitted. Unfortunately they are covered with glass, so that one cannot take the measurements of the screens, but the screens have no chocks I have not seen them myself. I am speaking from hearsay, and you will have a witness before you who has visited them. The screens are, I am told, parallel to the keel, and there are no chocks to them whatever.

90. I am a little anticipating, but I should like to know your opinion as to this point. Assuming that you desire to have, and must have, an unbroken and uniform light over 10 points from right ahead of the vessel, by which I mean right ahead of the keel at a certain distance, is that compatible practically in your judgment with the screen being so placed as to prevent the rays of light crossing this projecting line of the keel?—No, I think certainly not. I have never for one moment thought the rays of light would not cross the line of keel.

91. What I want to know is this. Assuming that you have, and must have, a uniform and unbroken light from a point straight ahead of the vessel on the horizon to two points abaft the beam; that is to say, an arc of 10 points—is that consistent, in your judgment, with all the rays being so screened as not to cross the line of the keel?—No, certainly not, it would be impossible.

92. Supposing you constructed a screen so as to shut off the red rays, and if you were crossing the projected line of the vessel at say, a mile and a half or two miles, what would be the effect on the appearance of the light at a distance straight ahead of the ship—would it seem dim?—You would not see it at all, except at a short distance. If you look at lights close to, you will see a certain amount of reflection from the lens, but that quickly disappears as you get away from the light.

93. So that, in your judgment, if you are to have an unbroken light over 10 points you must necessarily have the rays of light cross at some distance, and not a very long distance ahead of the vessel?—You must have them cross at some distance and not only that, but if you so screen the light that it cannot be seen ahead of the ship it cannot be seen ahead of the light either, because the only way that you can screen the light to effect that would be to absolutely mask it from ahead; and if this were done, you would not be able to see the full volume of light, as I think I have pointed out in one of the papers, until you get about a degree and a half on each bow.

94. What is in my mind is this, and I desire, if I can, to see how far the facts can be reconciled. The rule as to the unbroken light over 10 points and the rule that the lights are not to cross, as I understand in your view, these two rules taken in their strictness, that is to say, that the light is to be absolutely unbroken and that the rays are not to cross anywhere, are not compatible?—It would be perfectly impossible to prevent the light crossing, unless you brought the chock out to a point where it would absolutely shut out all the rays of light. You could not see the rays of light either ahead of the ship or ahead of the light itself.

95. (*Mr. Bolam.*) That is if the chock extends to the outside of the wick?—Yes. To enable you to see the whole light you would require to be about a degree and a half on the bow.

96. (*Rear-Admiral Andoe.*) If the line were drawn from the inner edge of the wick parallel with the screen, and the chock placed accordingly, then you would have the light right ahead, would you not?—Undoubtedly, and then it would cross at an angle of nearly one and a half degrees.

97. And it would give you sufficient light across the bow?—That I do not say. I do not think so.

98. The direct rays would cross at a certain distance ahead of the ship?—I place on the table another diagram which shows exactly the distance at which the rays would cross.

99. Do I understand the wick is not often placed in that position?—The wick is sometimes at right angles with the keel, and it is a question whether it is better to have it parallel with the chord of the arc or not. I have not made up my mind, but I know that my colleague, Mr. Samson, who has assisted me, is very strongly of opinion that the wick ought always to be at right angles to the keel.

100. (*Mr. Scrutton.*) Has this been a matter of experiment at Shoeburyness at all?—Not sufficiently so. We can only experiment during certain conditions of the tide, and it is very difficult to carry out as many experiments as might be desirable.

101. (*Chairman.*) Apart from the screens, does the construction of the lamp itself regulate the amount of light that would be seen round the horizon.

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I mean this, the first rule is that the lamp is to be so fixed and so constructed that there will be a uniform and unbroken light for the 10 points?—Yes.

102. How far does the construction of the lamp itself ensure that, apart from the screen?—We have had quite recently to issue some instructions with reference to the construction of lamps in consequence of a new rule made in 1892, that the centre of the wick should be the centre of curvature of the lens. There is no statutory power to enforce this and it is only a recommendation. In some cases the makers put the wick back without altering the construction of the lamp, and the consequence was that the light was then screened by the housing of the lens.

103. Supposing that there was no provision whatever as to the screens, would it be practicable by mere construction of the lamp to ensure that there should be a uniform and unbroken light of 10 points and no more?—I have not considered that, but I think it would be extremely difficult.

104. The regulation provides that the lamp is to be so fixed and constructed, apart from the screen, that it shall show a uniform and unbroken light over 10 points, and I should like to know how it is to be determined that the light shall show only two points abaft the beam. You have no screen there at all?—No, but still if the light will only show for the given number of points, and it is properly fitted and screened in one direction, the other, I think, follows; and besides, it does not matter whether the light shows with absolute accuracy to two points abaft the beam or not. It does not matter if there is a variation of two or three degrees abaft the beam. And experiments at Shoeburyness have shown that lights do vary somewhat in this respect.

## Thursday, 28th March 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir EDWARD HARLAND.
Captain HUGHES HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

Sir DIGBY MURRAY recalled and further examined.

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105. (*Chairman*). With regard to the suggestion that was made to surveyors, from 1868 up to the issue of the new rule in 1892, can you state to what angle the light would have been screened from the outer edge of the wick if this suggestion had been complied with by the surveyors?—It would depend upon the position of the wick in the lamp; but in lamps of the patterns manufactured prior to the instructions of 1892 I found, after very careful measurement, which was in each case independently verified, that the mean would be 4° 30′. The patterns measured represented many thousands of lamps. I put in a list of the measurements.*

106. (*Sir E. Harland*). Measuring from the outside of the wick?—Yes.

107. (*Chairman*). Were those suggestions which you have mentioned, that is to say, the suggestions issued to Surveyors from 1868 up to the issue of the new rules in 1892, regarded as definite instructions to the surveyors, or were they only recommendations?—They were only recommendations, and the consequence was such a diversity of practice as rendered precise instructions imperatively necessary. Many of the surveyors have personally thanked me for their having a precise rule to guide them.

108. I think at our last meeting, you put in a summary† of the reports from the Board of Trade officers showing what the actual practice was as regards screening prior to 1892, and a form of report‡ made by officers testing ships' lights. Is there anything you desire to add with regard to these two papers?—Merely that the summary was drawn up by the Secretary of the Rule of the Road Committee, as I preferred not to do it myself, and that the form of report shows what was in the mind of the Board of Trade from the very earliest date as to the light being uniform and unbroken.

109. Uniform and unbroken over ten points of the compass, that is to say, from right ahead to two points abaft the beam?—Yes.

110. I see it is a precise angle. Does the light show more than 10 points from right ahead, and if so, how many degrees more?—The light does show over somewhat more than 10 points, but a uniform and unbroken light shows over ten points of the compass only, namely, from right ahead to two points abaft the beam.

111. In your opinion, what is the proper angle to which side lights should be screened?—4° inwards.

112. That is to say 4° from the outer edge of the wick?—Yes.

113. What are your reasons for thinking this is the proper angle?—Because if they were screened to a finer angle ships steering parallel courses and bearing from 1° to nearly 4° on each other's bows would, if they did not alter their course, pass either dangerously close or else come into collision; and as they are not crossing ships there is, up to the present moment, no regulation which would apply to them. I put in a table showing what would happen at distances of a quarter and half a mile if these vessels maintained their course.* And I may remark that the bearing of 4° is the bearing from the outer edge of the light, not from the middle line of the ship, and that consequently if the ships bore 4° from each other, their side lights would not be visible from both sides of the bridge.

114. You say in this paper 4°, that is to say something like a third of a point, from the outer edges of the wicks of the two lights, is that so?—Yes.

115. I do not quite follow that because I see in your paper you have put 4° and 3° on each other's bows. Do you not mean 4° from each other's lights?—No, I mean the ships are 4° and 3° on

* *See* Appendix 2, No. 9. † *See* Appendix 2, No. 2.
‡ *See* Appendix 2, No. 3.

* *See* Appendix 2, No. 4.

each other's bows. I am not referring to the lights, but the bearing from the extreme outer rays of the lights is as stated in the paper.

116. I see, the table is headed "ships distant a "quarter mile (500 yards) from each other, and bearing from the intersection of the extreme outer rays "of their side lights 4°, 3°, 2°, and 1° from each "other"?—Yes, that is so. The bearing is given from the intersection of the extreme outer edges of the lights, but it would have made no difference to the result if it had been taken from the lights instead of the intersection.

117. I am afraid that I do not exactly follow that?—All I mean is that if instead of taking the bearing of a vessel from the outer edge of the wick, you take it from the middle line of the ship, there is, of course, a slight difference in the angle That is all that I mean.

118. But if you take it from the outer edge of the light?—It would be exactly the same thing as taking it from the intersection; the bearing would be the same.

119. You say that it makes no difference whether the bearing be taken from the point of intersection or from the outer edge of the rays?—Yes.

120. What you are saying in this paper is that ships on parallel courses and in certain positions to one another will, if they follow the rule "green to green, red to red, perfect safety, go ahead," come into collision if they keep their course?—Yes, and it does not make the least bit of difference whether you take the bearing from the outer edge of the light or from the point of intersection; the result is the same. But if, on the other hand, you take the bearing from the middle line, you decrease the angle.

121. Of course you do; the bearing from the middle line may be nothing, and would be nothing?—The angle would be only very slightly decreased in this particular case.

122–6. The ships are steering parallel courses and keeping their courses and you say no article of the Regulations applies to them; why do you say that?—Because they are not crossing ships and there is no article which does apply to them. A ship is compelled to keep out of the way of all crossing vessels which are on her own starboard side, but *these* ships are both on the starboard side of one another.

127. What lights would a vessel in *that* position see?—The mast head light and the green light.

128. And the green light a little on the starboard side?—Yes.

129. And then you say that under those circumstances supposing she did nothing, the effect would be that there would be a collision?—Yes, if they absolutely kept their courses; and at all events they would get so near to one another as to be dangerous. What I find is, that when ships get so close to one another something nearly always takes place which brings about a collision. You will see the paper I have put in only refers to ships a quarter of a mile and half a mile apart, and in foggy weather at sea you constantly do not see a ship until she is half a mile from you, and sometimes not even until she is within a quarter of a mile of you, and sometimes you do not see her at all.

130. The point, is it not, is this, that if the lights of the ships were so screened as to be thrown straight forward parallel to the line of the keel and not to cross at all, you suggest that that would be a position of difficulty?—I suggest more than that, I suggest that with lights crossing at small angles, there would be a position of great difficulty, especially in the case of ships of great beam. I have not gone into the question of lights screened in a line of the keel, and in this table I have stopped at 1°.

131. You have considered angles of 4°, 3°, 2°, and 1°, and you say that in some cases even 4° presents difficulty?—Yes, when the ships are of very great beam. We have no ships of 70 feet beam out of the Navy, but we have ships in the Merchant Service at the present time of over 65 feet?

132. Then to put it shortly, it really comes to this. Vessels approaching in that position, when their lights are screened even in some cases to 4° would be in a position of seeing only one light of the approaching vessel, and therefore would be misled or might be misled as to what was their duty to do; it comes to that?—Yes. There would be no rule whatever applicable to them, and the regulations would not apply.

133. You mean that the vessel having green a little on her own starboard side would not be under any obligation to keep out of the way of the other vessel?—If there was only one of them crossing, certainly she would have to keep out of the way.

134. But both?—Both having green on the starboard side?

135. Both having green on the starboard side neither is under an obligation to keep out of the way. That is what you mean to say?—No, not quite that, but perhaps if you will allow me to go on to the next paragraph and refer to Mr. Gray's remarks on the Regulations for Preventing Collisions at Sea, which are at least semi-official, I can better explain what I mean. Perhaps you would allow me to read part of the preface and also part of page 7. "These "remarks have received the official approval of the "Admiralty, Board of Trade, and Trinity House as "well as of the French Government; and the con-"struction of Articles 11 and 13 advocated has been "made positive and binding by an Order in Council."* This latter is foreign to my purpose at present. I only allude to it. Then, if you will turn to page seven, this is what is said: "Everyone is unanimous "in agreeing that no two ships can come into collision "so long as they show each other the same coloured "light, green to green, or red to red.

"7. The rule cannot therefore apply—

"(*a.*) When a green light is seen anywhere on the "starboard side;

"(*b.*) When a red light is seen anywhere on the "port side;

"(*c.*) Nor can it apply when a red or a green light is seen ahead." And therefore what I am arguing is that under the circumstances the ships are left without rule, and that if a fine angle of screening is decided on, it will, I think, be very mischievous, unless the regulations are altered.

136. Of course you will be prepared for the answer that supposing two ships were in that position and each saw the other coming on with the light getting no broader, that then it would be the duty of one or other of the ships or of both to take action?—You mean to say the bearing would alter so little as to convey to the master an intimation of danger and that would be decidedly the case where two ships only are under observation. But the misfortune is that in the Channel and other narrow waters you very frequently have six or seven vessels all approaching at the same time, and it is an absolute impossibility for the master commanding a ship making, for instance, the Irish Channel, where he would probably have the Irish land aboard, and all the other steamships on his starboard side, so that he would have to get out of the way of the whole of them, to tell how those ships were standing relatively to his own ship, as he certainly could not carefully watch the bearing of the whole of them.

137. Do you desire to say anything more about this table?—No. I think the table will sufficiently explain itself.

138. (*Mr. Scrutton.*) Could we have a diagram to illustrate this table?—Yes, I will have one prepared and put it in later.† I have several diagrams on the table and after my examination is finished I should like to bring them to the notice of the Committee. I should think some of them would convey a large amount of information.

139. (*Chairman.*) What are your reasons for thinking that 4° is the proper angle?—Mr. Gray's verses

* Order in Council of the 30th July 1868.

† *See* Appendix 2, No. 4.

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which were approved by the Admiralty, the Board of Trade, and the French Government, and which have been translated into almost all languages, are known, in all human probability, to every nationality in the world, including most of the Eastern nations:—"Green to green, red to red, perfect safety, go ahead," would with smaller angles, be positively misleading. These verses were intended to apply to lights screened in conformity with the angle of screening approved by the Admiralty, the Board of Trade, and the Trinity House, as shown in a parliamentary paper of 1869, a copy of which I put in,* and were never intended to apply to finer angles.

140. We have been told that screening to the 4° angle is dangerous; what is your opinion as to that?—It is not dangerous. Steam ships approaching one another and bearing 4° on each other's bows have only to port half a point to clear one another. If they port one point they will pass a long way clear of one another, and this when they are steering parallel courses, which is the most crucial position. I put in a large diagram to prove this, and I think I may say, as an old master of a ship, that I never knew a man to port to so small an extent as half a point to clear another ship. I should say that one point was the very least he would port, and, you will see from the diagram I am just going to put before you, that it is perfectly safe even if the two ships port half a point; but if they port a point, they will go abundantly clear. These are two ships [*pointing on a diagram*†] one mile apart—that is to say, 2,000 yards. These marks which you see opposite both ships indicate half a point and a point. If the two ships port half a point they will pass 183·5 feet clear of one another at the middle distance. On the other hand, if both port one point they will pass 765·5 feet clear of one another.

141. (*Rear-Admiral Andoe.*) What does the half point give?—183½ feet. The distance is rather fine, but still the ships would go clear, and I never knew a man port as little as half a point.

142. 183½ feet at the middle distance between the two ships?—Yes.

143. (*Chairman.*) The red lines on the diagram represent the port lights?—One is the red light of the one ship, and the other is the red light of the other.

144. One of the vessels would show both red and green?—Yes. I have not thought it necessary to put in the green because it is evident they both see one another.

145. Do these lines on the diagram show the extreme limit at which a vessel would see the light?—I do not follow.

146. Do the lines define the limits within which one vessel would see both lights of the other?—Yes, if they were each to come ahead only a ship's length they would not be able to see one another's two side lights. They have only to keep their course a very short distance and they would not be able to see each other's two lights.

147. (*Captain Hallett.*) The diagram only shows ships at short distances?—Because I think, as a rule, ships do not alter their helm to get out of one another's way until they are about a mile apart, and it is only under very rare circumstances of weather that you will see the lights anything like two miles.

148. They will be twice as far apart if they alter their helms at two miles?—Yes.

149. So that the same course will take them twice the distance apart?—No doubt, whatever, but the angle will be exactly the same.

150–1. (*Chairman.*) These side lights are screened to 4°?—Yes.

152. What I understand your view to be is, that although it is quite true that each vessel would take the other to be "end on" to herself, yet this would not present a position of danger, because each vessel would be sure, under these circumstances, to port, thinking she was end on?—She would be sure to port at least half a point.

153. And that half point would clear her you say, and she would not be content with porting half a point, but she would port a full point in all human probability?—I should say that each ship would port not less than a point.

154. And that would carry her clear?—Abundantly clear.

155. So that although two vessels might believe each other to be end on when they were not end on, still there would be no danger if each ported?—I say there would be no danger whatever in screening the lights to such an angle.

156. (*Sir E. Harland.*) And that is the worst case, each crossing the bow of the other?—Yes.

157. (*Chairman.*) The ships being supposed to be on parallel courses when they sight each other?—Yes.

158–62. (*Rear-Admiral Andoe.*) At what distance would they pass if they continued their distances from each other?—You wish to know what would happen if they kept their course?

163. I only want to know what distance there would be between the two, supposing they continued their course without altering their helm?—If they continued their course without altering their helm, they would pass abundantly clear. I can tell you exactly, 400 ft.

164–7. If they ported half a point they would not actually come into collision?—No, it would take them 183½ feet clear of one another, and if they ported a point it would take them 765½ feet clear.

168. You are assuming each to port?—Yes, it is the business of each to port.

169. I understand now?—It is the business of both of them to port.

170. If each ports half a point the distance between them will be 183½ feet?—Yes.

171. 183½ feet?—Yes.

172. And if each ports a full point then the distance between them at the middle distance will be 765 feet?—Yes.

173. And if each ship keeps her course, they will clear each other?—Undoubtedly.

174. (*Sir E. Harland.*) If each ports half a point, the total will be a point?—Yes.

175. If half a point gives 183½ feet, how could the whole point give 765 feet?—If you measure it I think you will find it as I say.

176. I should have thought, roughly, it would have been double?—They are both porting it.

177. (*Captain Thomson.*) There is only one little matter which has not been allowed for in this theoretical diagram, and that is, when vessels alter their helms, they do not change course immediately in a straight line; the centre of gravity of the vessel continues more or less in the original direction. This is not important at long distances, but at short distances it tells against the diagram.

178. (*Rear-Admiral Andoe.*) I think that is only theoretical. It would hardly affect the practical working of single ships at sea, although in squadrons it has to be taken into consideration?—It would be a very short time before she assumed the direction due to the helm in the course of alteration of only one point. I think, for all practical purposes, you might dismiss that from consideration.

You must remember one thing and that is that I am giving you no opinion as to what the screening of side lights ought to be under any circumstances other than those which I have to deal with. I have to deal with the regulations for preventing collisions at sea as they stand. I have to deal also with what has become the practice of seamen owing to Mr. Thomas Gray's verses. I am rather radical in my views as to lights. I do not think that the side lights are a sufficient indication especially when you have seven or eight ships approaching you at the same time; and I think there ought to be some further intimation; and, in the course of time, seeing that our steam tonnage is enormously increasing, we shall be bound to have

* H. C. 114 of 1869, *See* Questions 26–37.
† *See* Appendix 2, No. 13, and diagram.

something. I am putting in a diagram, not with a view to the Committee recommending any alteration in the regulations for preventing collisions at sea but simply that they should be able to see what for many a long year has been in my mind on the subject. It is perfectly easy with this plan to see when ships are approaching one another in such a direction as to hit one another with their stem. A man who has a number of ships on his own starboard side has to get out of the way of all those ships. If these suggested lights were adopted, he would know at once which of these ships he would require to keep the run of and which he could absolutely dismiss from his mind, and I think that would be a very, very great factor in the direction of safety.

(*Rear-Admiral Andoe.*) Should not that be considered later?

(*Chairman.*) Yes, my impression is that the reference to us ought strictly to be limited to what ought to be done considering the international regulations as they stand.

(*Sir Digby Murray.*) I am not asking the Committee to adopt it, it is merely for information.

(*Chairman.*) I daresay the Committee would think it right to consider it later.

179. (*Mr. Ismay.*) May I ask whether you have a diagram showing what would happen if lights were screened to 3°?—I have not a diagram on a large scale with reference to 3°, but if the Committee want one I could very readily have one prepared.

180. (*Sir E. Harland.*) I should have thought it would be very satisfactory to have a diagram illustrating 4°, 3°, 2°, and 1° and see what it amounts to?—I will put in such a diagram.*

181–3. (*Sir Digby Murray.*) Here is another diagram. It may be of use to the Committee later on; it shows ships of different beams with the intersection of their lights when these are screened to 1°, 2°, 3°, and 4°.

(*Chairman.*) That will be very useful but we must come to that presently.

184. Is it not the case that reflected light is seen at a greater angle than that to which the lights are screened?—Sometimes in the case of dioptric lenses at very short distances, this varying with the condition of the atmosphere. With other lenses the reflected light would probably not be seen at a greater angle. Mr. Samson and I experimented† with a pair of full sized side lights having plano-convex lenses, with the result that at 840 feet from the lamps the green light could only be seen 17 feet from the middle line, instead of about 29 feet. The red light showed somewhat in excess of the theoretical distance, but it is to be remembered that it is the faintest thread of light which is seen, and would never at sea attract attention or be visible except through powerful glasses; and I think I may say with reference to this that when these experiments or the result of these experiments are seen by people who have not themselves attended them, they are apt to think that the distance at which these lights are practically visible is very much greater than it really is. I am perfectly certain that at sea where you always get an incrustation of salt on the lenses sometimes to a very considerable extent, that you would not see the lights to anything like the theoretical distance from the middle line. And the experiments at Shoeburyness of October 1893,‡ which relate to unusually good lamps, and which were most carefully conducted and reported upon by the Director of Experiments, show that the green light never showed to the theoretical distance from the middle line. At 2,000 yards the distance observed was 399 feet; the theoretical was 404·5 feet. At 1,000 yards the observed distance was 180 feet; theoretical 194·8. At 500 yards the observed distance was 84 feet, theoretical 89·9 feet. The red for all practical purposes agreed with the theoretical distance. In one case it showed 3½ feet more and in another 6 feet more, and another 3 feet less. On board ship where there is always a slight incrustation of salt on the lenses, and the lamps cannot be in the same excellent condition as to cleanliness and trimming as they are when used for experimental purposes, they probably do not show to anything like the theoretical distance to the right and left of the ship's path.

185. What would be the result of screening the lights to no angle, *i.e.*, in a line with the keel?—There is only one way of doing this, *i.e.*, by increasing the depth of the chock so as to mask the whole of the light when viewed either from ahead of the ship or from ahead of the light, and the full volume of the light could not be seen at a smaller angle than about 1½° on either bow.

186. I observe you say the "*full* volume of light," would there be some light, say, straight ahead of the vessel?—No, not ahead of the vessel, nor ahead of the light; you would have to be a little on one side of the chock to see it.

186*a*. Supposing the light so screened that the chock should mask the whole of the light, what would be the breadth of water at a thousand yards before the whole volume of light becomes visible?—At a thousand yards?

187. Two thousand yards—I mean a mile?—Well it would be exactly half the breadth between the inner edges of the two lights plus the distance due to the angle before the whole volume of light would become visible.

188. I understand you to say you would have to be 1½° on either bow to see the light. What would 1½° on either bow give you of dark space at a mile?—I will let you know. The dark lane will be the distance between the outer edges of the two side lights, but I cannot answer as to the distance at which the full volume of light would become visible without working it out.

189–92. What I wanted to know was, supposing the lights screened in this way, what would be the breadth of the dark lane?—It depends entirely on the distance between the outer edges of the two lights, and differs in every ship in accordance with the breadth. On the other hand, the distance from the middle line at which the full volume of light becomes visible depends on the half width between the inner edges of the wicks.

193–4. (*Chairman.*) That would be so, of course. To take the ordinary case I should like to know what it would be taking the same breadth, as you have taken for the other purpose, say, 30, 40, 50, 60 and 70 feet?—If you will tell me exactly what it is you want I will put it in.*

195. (*Sir E. Harland.*) Then a further question arises. Although you screen the light theoretically, still there would be straight rays, as it were—a ray of half the width of the wick?—Exactly.

196. Would that cross the centre line of the vessel?—No.

* If the wick is one inch in breadth and placed at right angles to the keel, one inch will be the tangent of the angle = 1° 35′ 15″ the length of the screen being 3 feet, *i.e.*, 36 inches.
If the wick is placed parallel to the chord of the arc, ·8 of an inch will be its transverse breadth, equal to an angle of 1° 16′, the length of the screen remaining the same.
The distance in yards from the ship's path will be as follows:—

| Distance in yards from the Wick. | Tangent 1 inch, =1° 35′ 15. | Tangent ·8 of an inch, = 1° 16′. |
|---|---|---|
| | Distance. | Distance. |
| 500 | 13·86 yards | 11·10 yards |
| 1,000 | 27·72 „ | 22·11 „ |
| 2,000 | 55·44 „ | 44·22 „ |
| 4,000 | 110·88 „ | 88·44 „ |

To the above must be added one-half the breadth between the inner edges of the two lights. For instance:—

| | | |
|---|---|---|
| 1,000 yards | 27·72 yards | 22·11 yards |
| 7 „ | 7 „ | 7·00 „ |
| | 34·72 yards | 29·11 yards |

* See Appendix 2, No. 4, Plate VI.
† See Appendix 2, Nos. 5 and 6.
‡ See Appendix 2, No. 11.

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197. Two miles off?—No.

198. Three miles?—No, because if the chock entirely obscures the light you first see the full volume of light when you are about 1½° outwards from the light.

199. (*Chairman.*) I see. The lights can only be screened in line with the keel by masking the whole of the light from ahead?—I could let you have further details by the next meeting.

200. That would give us what we want?—I may add that what takes place is simply this; to ascertain the angle at which the full volume of light becomes visible, all you have to do is to take the transverse width of the wick, and that is the tangent of the angle at which you see the whole light outwards.

201. Perhaps the thing can be worked out in a little more detail for the information of the Committee. I should like to know myself what would be the breadth of the dark lane at a mile with the lights screened to 1°. Would there be any dark lane if it was screened at 1°?—Yes, there would until you get a very considerable distance away from the ship, but you would never have the full volume of light ahead of the ship if it was screened to 1°. I have shown that in a paper* which you have before you. "The full volume of both lights cannot be seen on the middle line at any distance." The figures underneath show the angle at which the whole volume of light becomes visible.

202. (*Mr. Scrutton.*) That is in Departmental paper No. 179?—Yes, page 6.

(*Chairman.*) "Table showing the theoretical "minimum distance at which the full volume of both "the side lights can be seen at a point on the middle "line ahead of the ship, *i.e.*, directly in line with the "vessel's keel, wicks 1 inch in breadth and placed "vertically to the screens." Then there is the breadth of the wick, and the distance from the wick to the chock, 36 inches. Then at 1° the full volume of both lights cannot be seen on the middle line at any distance.

(*Sir D. Murray.*) I may say we have wicks considerably broader than that, but I did not want to go into extravagant measurements. We require wicks for colza oil to have a width of 1¾ inches, but I have kept myself to the smaller measurements.

203. It has been stated that if lights were screened in this manner, that is to say, screened in a line with the keel and so as to mask the whole of the light from ahead, then the lights would not both be visible at one and the same time, but the yawing of the ship would show first one light and then the other. What have you to say about that?—My experience of large powerful passenger steamships is, that in fine weather they steer nearly a straight course, and at all events do not yaw sufficiently for this purpose, and if this were possible it would be contrary to the regulations, and also most dangerous. I would call attention to the following extract from a memorandum of my own written in 1889, which was not intended to apply to this particular subject, though it appears now to be very pertinent to it. It was a paper placed before the Rule of the Road Committee before the English delegates left for Washington, and I was then a member of the committee appointed to consider what amendments should be proposed in the regulations. These are the remarks: "Collisions in my opinion "are for the most part attributable to one of the "following causes:—(1.) Bad look-out. (2.) Non-"compliance with the regulations for preventing "collisions at sea. (3.) Injudicious compliance "with Article 18 of the regulations. (4.) Error "in judgment and vacillation on the part of the "officer in charge of the deck. With the excep-"tion of (4), all these conditions have been already "more or less alluded to. The following is an "example of (4): The officer of the watch of a "steamship sights a red light a little on his star-"board bow and ports to it. The next moment the "red light is shut in, and the green light opened out. "He then shifts his helm and puts it hard-a-starboard. "A moment afterwards he sees both side lights, and "stops and reverses his engines, when a collision "occurs," and I cannot tell you how numerous the cases have been which have come under my notice of this kind. "According to the statement of this "officer the vessel he was approaching did not keep "her course, but kept alternately porting and star-"boarding, whereas what really occurred was that a "small vessel approaching him in almost a direct "line yawed, so as to show alternately each of her "two side lights, and had the steamer been kept "under her port helm she would have easily gone "clear.

204. Perhaps you will tell us what the view taken by the Washington Conference was with regard to this question of intersection of side-lights?—"General "Division 1–5. The lantern should be so constructed as to ensure the light having at least the required minimum power in the ideal line connecting the "lantern with the horizon, even though the vessel "be heeled one way or the other 10°. General "Division 1–8. The side-lights should be so screened "as to prevent the most convergent rays of light "being seen across the bows more than half a point." That was what they arrived at, at the Washington Conference, and I may say that I thought 10° was not sufficient. I know that many of the narrow ships laden with grain arriving at Liverpool years ago, had 22° or 23° permanent list, and therefore what we have asked for in our instructions is, that there shall be a vertical divergence of 20°, both above and below the horizontal plane. As they are building ships now with much more beam than they were in those days, I am not quite sure that it might not be reduced to 15°. The Admiralty, I believe require 10°.

205. The recommendation of the Conference was that the most convergent rays of the light should not be seen across the bows more than half a point. What number of degrees does that correspond to?—5° 37′. I think perhaps as you have asked that question, I may say that when I carried out my experiments in 1891.* with a view to ascertaining what the angle should be in accordance with the Washington Conference, I had not quite an open mind on the subject. I talked the matter over with the Hydrographer, and we both came to the conclusion that 3° was the proper angle judging solely from paper, but when I came to carry out the experiment, it struck me that that was too small—that we could not possibly go in for so small an angle.

206. And so you increased it to four?—We increased it to 4°. We originally screened them, as you will see, at three, and the idea both of Mr. Samson, who accompanied me, and myself, was that three would be the proper angle; but you see we cannot say that all vessels are to have dioptric lights to begin with, and with those plano-convex lenses the green light only showed to a distance of 17 feet from the middle line instead of 29 feet, 29 feet being the distance to which it should have shown theoretically.

207. You conducted some experiments on the 5th of May 1891 with the lamp screened to 3°?—Yes, and the reason we did not continue them was that we felt that with some description of lamps at all events, it would not answer.

208. (*Mr. Ismay.*) If you could have the best description of lamps then you think 3° is enough?—At one time I should have said yes, but now I have more thoroughly considered the subject I do not think it desirable to screen to a smaller angle than 4°. That is, of course, on the assumption that the present regulations remain unchanged. If you alter the regulations then I think you might alter the angle.

209. In what way would you alter the regulations?—So as not to leave ships without any regulations to guide them. There is one thing that is quite evident, and that is that if two vessels are bearing 4° from one another on the port bow, both the side lights of each ship being visible to the other no danger can arise if

* *See* Appendix 2, No. 7.

* *See* Appendix 2, No. 5.

they port, because they will not cross one another's tracks; but if, on the other hand, each is on the other's starboard bow, there may be a danger in porting if the angle is too great, because each must cross the track of the other.

Perhaps I may be allowed to refer back to the statement I made yesterday, as to the instructions of 1875, because after what took place at the committee I thought it was necessary that I should very carefully consider whether I ought in any way to modify the statement I made; and if you will permit me I will read the conclusion I have arrived at:—"I have carefully considered "the statement made by myself that the word *wick* in "the instructions of 1875 was a misprint for the word "*lens* and I am still of that opinion because (1.) I was a "member of the Rule of the Road Committee in 1875 "and I do not think such a radical alteration would "have been made in the instructions without my being "consulted, or at least informed of it. (2.) Because "it is an absolute contradiction to the paragraph "immediately preceding it and also to diagrams 7, 8, "9 and 10. 6 does not apply. If it is not a mis-"print then with an inch wick parallel to the chord of "the arc, the angle would be 1° 16′; and to this I "am sure the late Mr. Thomas Gray would never "have assented, and I should have opposed such an "angle to the utmost of my ability as being in my "opinion absolutely dangerous. Besides other dis-"advantages such an angle would not admit of the full "volume of light being seen ahead of the ship."

210. Now, I think, there are certain papers which you were going to be good enough to produce to the Committee?—Yes. They are as follows:—

Instructions to Surveyors. Lights and Fog Signals.*

Remarks on the Regulations for preventing Collisions at Sea, by the late Mr. Thomas Gray, as approved by the Admiralty, the Board of Trade, and the Trinity House as well as by the French Government.†

Return to the House of Commons dated March 19 1869.‡

Reports by Mr. Samson and myself on the Experiments of May 1891.§

In addition I think I had better put in the diagrams and the report from the Director of Experiments at Shoeburyness relating to these experiments of 1891.‖ And in doing so I should like to call the attention of the Committee to one statement made by him. The lights that we were trying were a pair of lights which were expressly manufactured for the Board of Trade by Harvie. They are very much larger than ordinary ships' lights. They have duplex burners with 1¼-inch wicks, and they burn about twice and a half the quantity of oil that an ordinary lamp does. The point to which I wish particularly to call your attention is that at 4,000 yards the red light was visible 286 yards from the middle line, and the green light was visible 225 yards from the middle line.

211. How were they screened?—They were screened to 4° and the Director of Experiments made this note. He says:—"The above two distances "correspond to rays making at the theoretical crossing "point, angles with the centre line of 4° 10′ for the "port light and 3° 17′ for the starboard." You see at that distance there was a difference of 1° in the apparent screening of the two lights.

Then there is the memorandum by myself contained in Departmental Paper, No. 179.¶

Further memoranda by myself as to screening.**

The next is a letter from Mr Samson,‡‡ the principal assistant to the engineer-surveyor-in-chief, to myself in accordance with my request that he should draw up a memorandum showing the general effect of screening ships' lights in such a manner as to produce forward of the vessel a direct parallel line.

A letter from the German Lloyd to the Board of Trade.††

212. (*Chairman.*) Is there any other information from foreign nations with regard to screening?—We have had letters from Belgium, Denmark, Chili, the United States, and the Netherlands, on the subject.*

The appendices and diagrams referred to in the foregoing papers and in my evidence generally.

The reports of the experiments made in October 1893.†

Then there is the diagram I referred to before. I do not think it is necessary that it should be put in. I put it before the Committee for their information. [*Producing and describing the same.*] This is a vessel which is obliged to keep out of the way of all vessels on her own starboard side. Please dismiss from your minds all ideas of distance. It is not intended to show distance. Now if every vessel was obliged to have a second masthead light showing 2½° on each bow, then when a vessel entered either the English or the Irish Channel and saw a number of masthead lights on her starboard side she would know at once which of those vessels were approaching her with risk of collision to herself; and the information would enable her readily to avoid all those which were dangerously approaching her.

213. The suggestion in this is that the masthead light at present shows at too great a range, is that it?—The present masthead light conveys very little information, and in thick weather you are very often very close to the side lights, especially in fast ships, before you see them. And in addition to that, the coloured lights absorb much of the white light. In one of the papers I have handed in‡ I have estimated as nearly as I can ascertain the percentage of colour that is absorbed, it varies with the depth of the colour. But with the lights I am suggesting, you would be able to tell at once whether the vessels were approaching you with risk of collision. This new light I call the danger light and the vessel that is to keep out of the way should never open the danger lights of these other vessels unless they were broad on the bow. If they were broad on the bow the officer in charge would be able to judge whether he could cross ahead of them with safety.

214. (*Sir E. Harland.*) This drawing does not seem to show the position of the second masthead light?—The mechanical drawings will be put in should the Committee desire to see them, by a witness who follows me, Mr. Samson, who has got them out under my instruction.

215. Do I understand there is one light above another?—Yes, the second masthead light is 12 feet or as much less below the other as may be necessary and the light should show 2½° on each bow only; whereas the other masthead light shows for 10 points on each side.

216. (*Chairman.*) You suggest that there should be two masthead lights?—Exactly.

217. The one there is at present showing 20 points, and then another one showing only 2½° on each side of the bow?—Exactly. I mean to say that it would be productive of a very large amount of safety and would relieve many a man from a great deal of anxiety.

218. (*Sir E. Harland.*) Would two masthead lights on the same stay lower down, not answer the purpose better?—No, I think you want this lower light confined to a small angle on the bow.

219. (*Chairman.*) The point is, you think that 20 points is too much?—It merely tells you that there is a steamship there.

220. (*Captain Hallett.*) How would you legislate for towing lights?—If this was adopted it would require a recast of the regulations, and I am not proposing that the regulations should be recast. I am only saying that if it is desirable to have a fine angle of screening then I think this is the better way of arriving at it.

221. (*Chairman.*) That is the way you wish to put it, namely, that if you are to screen very fine it would

* See Appendix 2, No. 1. † See Question 135.
‡ See Questions 26-37. § See Appendix 2, No. 5.
‖ See Appendix 2, No. 6. ¶ See Appendix 2, No. 7.
** See Appendix 2, No. 13. †† See Appendix 2, No. 17.
‡‡ See Appendix 2, No. 14.

* Printed in Parliamentary Paper C.—6900. † See Appendix 2, No. 11.
‡ See Appendix 2 No. 13.

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be a safer thing to add a second masthead light showing 2½° on each bow?—Yes.

222. (*Captain Thomson.*) I am afraid it would be impracticable?—I will leave it to the witness who will follow me, who is an extremely able man, to put before you the mechanical drawings showing that it is perfectly practicable.

223. (*Captain Thomson.*) 2½° on either bow, 5° altogether?—Yes.

224. Is it not a fact that masthead lights, as at present fitted, oscillate more than 2½°?—That is a mechanical difficulty which can be got over. I do not say that they do not, but you can get over it. And I think you will see from the drawings that as far as these lights are concerned the mechanical difficulty has been got over. I have here several other diagrams which may be of use to the Committee.

225. (*Chairman.*) The object of this diagram seems to me to be a very interesting one, because it is crucial upon the point of the dark lane, or dark triangle, or whatever you choose to call it. With a ship of 30 feet beam and lights screened to 1° you get a dark triangle extending to 859 feet from the ship. Then you get, if it is 4°, 214 feet. Then we will take the extreme case. Here is a vessel of 70 feet beam, I suppose that is extreme?—It is extreme for a merchant vessel.

226. Here is a ship of 70 feet beam screened to 1° and in that case the triangle extends to 2,005 feet. As I understand that represents the theory?—It represents the exact angle.

227. (*Mr. Scrutton.*) But do not the rays of the light extend beyond that line?—No. You have already had my evidence upon that point. At a very near distance they do, but when you get at a considerable distance from the light there is no reflected light whatever to be seen, and in the majority of cases they do not even show for the theoretical distance from the middle line.

228. (*Chairman.*) I do not think you would suggest that any danger would arise from the "dark triangle," which would exist if the lights are screened to 1°?—You could not see the full volume of light ahead of the ship as I have pointed out in the table I have put in.*

229. Strictly speaking not. That is perfectly true, but in this "dark triangle," theoretically you would see no light at all?—You would not. I may say that when the Rule of the Road Committee visited Shoeburyness for these experiments we at once gave up all idea of anything less than 2°, after trying it. The Committee said at once they did not want to see any more experiments with reference to the smaller angles.

(*Rear-Admiral Andoe.*) There is the case where in walking from one side of the bridge to the other you first of all see one light, and then the other; you do not know what the ship ahead of you is doing, and it would be very puzzling.

(*Chairman.*) I should have thought that if walking on one side you saw the red light, and walking to the other side of the bridge you saw the green, the conclusion to which you would come would be that you were within the lights, and that the vessel was end on in front of you.

(*The Witness.*) It is not practicable for a man to keep walking from one side of the bridge to the other in order to know exactly what lights are visible.

230. (*Rear-Admiral Andoe.*) Then the red light is much stronger than the green, and appears to be nearer to you?—Yes, very much more of the white colour is absorbed by the green.

231. (*Chairman.*) You wish to make some remarks, I understand, as to the position of the wick in the lamp?—Yes, the papers I have here show rather in an exaggerated form, the position in which the wick used to be placed in the lamps. It was not placed in the centre of the curvature of the lens, and when we required it to be placed in the centre of curvature the wick, in many cases, was moved, without the lamp being altered. The consequence was that some of the light was masked by the housing of the lens. That is the reason we are compelled to ask that the lenses should not be less than 120°. There is a diagram on the table showing it exactly. [*Producing diagram.*] All we ask for in our instructions is that the lens shall be 120°, and that not to enable the full and uniform light to show over a greater angle than ten points, but to enable the full light to be seen ahead of the ship.

232. Otherwise you cut off some of the rays?—Otherwise you cut off some of the rays, and that in many cases takes place in consequence of their moving the wick back to comply with our instructions. Many of the shipowners have been arguing that we have no business whatever to require this number of degrees; but then if we do not, we cannot require the centre of the wick to be the centre of the curvature of the lens, and that is the best place for it, because then all the rays are reflected backwards and forwards through the centre of the wick, and the refraction will then be a minimum.

233. I suppose you think, and the Board of Trade think, that under the Regulations they have power already to insist upon 120°?—I think so.

234. Otherwise the lights would not fulfil the statutory conditions?—The condition, namely, that the full volume of light shall be seen ahead.

235–8. (*Mr. Ismay.*) You think there should be some control as to the patterns of lamps?—I think we ought to have sufficient statutory power. I think we ought to have what the Germans are proposing to have, namely, a regulation lamp and a requirement that lamps of the same pattern should be used on all ships. There are numerous other diagrams, and if the Committee wish any information in reference to them I shall be happy to give it. The next paper I have to put in is the Order in Council of January 30th, 1893.* Then there is a Minute which was issued to surveyors in January 1894, in consequence of the makers setting the wicks back in the lamp without altering the construction of the lamp. It is as follows: "It has been brought to the "notice of the Board of Trade that some side "lights are constructed in such a manner that the "portion of the lamp which extends from the inner "side of the lantern to the inner side of the lens is "of such width as to either partially or wholly to cover "the wick. To obviate this surveyors should see "that the lamp is so constructed as to enable the rays "from the inner edge of the wick to cut the outer "edge of the chock. The angle to which the light "is to be screened should be regulated by the chock, "which it would not be unless the foregoing instruc-"tion is complied with. If the centre of the wick "is, as suggested in the instructions, the centre of "curvature of the lens and of the reflector, and the "lens is the arc of a circle extending 120° from an "angle of two points abaft the beam, the difficulty "alluded to will never arise. (Signed.) Ingram B "Walker, 2nd January 1894."

* *See* Appendix 2, No. 7.

* *See* Appendix 2, No. 12.

## Wednesday, 3rd April 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HUGHES HALLETT.
Mr. ISMAY.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

Mr. PETER SAMSON called and examined.

*Mr. P. Samson.*

3 April 1895.

239. Will you tell me what you are by profession?—I am a Board of Trade Surveyor; I also hold the position of Principal Assistant to the Engineer Surveyor-in-Chief.

240. How long have you been in the service of the Board of Trade?—Fully 22 years.

241. Have you had any sea service?—Yes, about eight years in Her Majesty's Navy.

242. In what capacity?—As engineer.

243. When did you begin to take a special interest in ships' lights?—When I entered the service of the Board of Trade. I was then appointed an Inspector of Ships' Lights, and I still hold that appointment in addition to other appointments.

244. Have you had any special opportunities for acquiring a good knowledge of ships' lights?—Yes, I have had the ordinary experience of an Inspector of ships' lights, and in addition I have been associated, more or less, with most, if not all the light experiments made at Shoeburyness on behalf of the Board of Trade and the Admiralty since the year—I think it was 1876 when I witnessed the first set of experiments; I have also in the capacity of Principal Assistant to the Engineer Surveyor-in-Chief, had to advise the Board of Trade on questions which have cropped up from time to time relating to the construction of ships' lamps.

245. Are you familiar with what may be described as the literature of ships' lights?—Yes, I have a fair knowledge of the literature of the subject.

246. What inferences do you draw from the Regulations which have been issued from time to time?—That the screens used from 1848 to 1868 were plain boards or strips of canvas about 3 feet in length, placed parallel with the middle line of the vessel and secured at the inboard side of the lanthorn.

247. What evidence is there that such was the case?—In the early Regulations the screens were required to be made of wood or canvas, and I infer, from the fact of canvas being allowed, that chocks were not then invented; indeed chocks do not appear to have been used until the Board of Trade issued the Instructions to Surveyors regarding side lights in 1868. The screens shown in a House of Commons Return of 1851, No. 696, illustrate the manner in which some lights were found screened in 1849 by Captain Denham, an Inspector to the Board of Trade. They are straight, and placed on the inboard side of the lanthorn. Moreover, I have examined the builders' model of the "Himalaya," built in 1853, of the "Scotia," built in 1862, and of Her Majesty's ship "Northumber-" land," built in 1866, and the screens of all these models are without chocks, and placed along the inboard side of the lanthorn.

248. If the screens were arranged and placed as you believe them to have been, would the lights not show across the bow?—No, not across the bow of the vessel itself. The lights were carried on each bow, at least it was so in Her Majesty's ships in 1863, and I believe the screens were originally intended to prevent the lights from crossing each other abaft the stem of the vessel. The side-lights are still called bow lights at the Admiralty.

249. Do you think the framers of the Regulations intended the lights to cross ahead of the vessel?—I do. It is quite clear from the diagrams attached to the Regulations issued in 1848,* 1852, and 1858, that such was their intention, because they show vessels in certain positions, one being ahead of the other, and state that the vessel which is ahead will see the mast-head light and the red and green lights of the other vessel, and for these lights to be seen together the side lights must necessarily cross.

250. Is there any diagram? We have got the copy of instructions?—Yes.

251. (*Mr. Bolam.*) Diagrams were referred to in Mr. Howell's evidence. They are the earliest, I think?—These are copies of the diagrams issued with the 1858 Regulations.

252. Were you referring to the 1858 or the 1848 instructions?—The 1858.†

253. (*Chairman.*) What I understand you mean is this, that the diagrams and the instructions show vessels approaching literally end on, so that in daylight their masts would be seen in line, and they are supposed, under those circumstances, each to see both the green and the red light of the other?—Quite so.

254. (*Mr. Bolam.*) May I ask if you are referring to the Regulations of 1848 or 1858, because we have both?—These diagrams were issued with the 1858 Regulations.

255. (*Captain Wilson Barker.*) But there are instructions in 1848?—Yes, the Admiralty added a note to the Regulations of 1848 to the effect that diagrams illustrative of the best plan, of placing side-lights, and instructions as to the proper mode of fitting lights on board steam vessels would be furnished to parties applying for them. These diagrams were published in the London Gazette of March 2nd, 1858, with the Regulations of 1858.

256. Can we not have these diagrams?—I can show you copies of them.

257. (*Chairman.*) You were good enough to produce a diagram issued with the Admiralty Regulations in 1847?—Yes, they were first issued with an Admiralty paper of 1847, which is printed in Return No. 696 of 1851.

258. I see that it is contemplated that two coloured lights would be seen by vessels directly approaching one another?—Quite so.

259. And that the two coloured lights being visible to each other would indicate their direct approach towards each other?—Yes.

260. "In this situation it ought to be a Standing "Rule that both should put their helms to port. This

* See Appendix 1, No. 1.

† The diagrams issued with the Admiralty Regulations of 1848 and 1858 were similar to those in Appendix 1, No. 1. The diagrams in that Appendix are taken from an Admiralty paper of 1847, printed in H. C. Return, 1851.

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3 April 1895.

"rule is already pretty generally adopted; but it would "add to safety if it were made imperative; for it is "evident that without some rule of this kind, well "understood and practised, it will be impossible to "guard at all times against accidents in the situation of "the two vessels here given." Then there is a diagram which shows the two vessels "end on" to one another and each vessel is supposed to see the green and red lights of the other?—Yes. May I call attention to the word screen in the page opposite to the Admiralty letter. There is a reference there to a canvas screen.

261. (*Chairman.*) I see. In the instructions of 1847 what is said is, "the manner of fixing the "coloured lights should be particularly attended to. "They would require to be fitted, each, with a screen "of wood or canvass on the inboard side in order to "prevent both being seen at the same moment from "any direction but that of right ahead. This is im- "portant, for without the screen (a principle first "introduced with this plan), any plan of bow lights "would be ineffective as a means of indicating the "direction of steering"?—Yes.

262. (*Mr. Bolam.*) So that the words "seen "from any point of view to right ahead" have been changed in the present Regulations to "seen "across the bow." The words originally were, "right ahead," and that has later come to "across "the bow." Can you tell us when the change in the phraseology took place?—I have not a copy of the text of the 1847 Regulations as originally framed, but the Regulations gazetted in 1848 contain the following provision: "The side-lights to be moreover, fitted with "inboard screens of at least 3 feet long to prevent "them from being seen across the bow. The screens "to be placed in a fore and aft line with the inner "edge of the side-lights." Again, in the Regulations of 1852 that provision appears in a somewhat modified form, and reads as follows: "The side-lights are "moreover to be fitted with screens on the inboard "side of at least 3 feet long to prevent the lights "from being seen across the bow" and in the 1858 Regulations it reads "The side-lights are to be fitted "with inboard screens projecting at least 3 feet "forward from the light so as to prevent the light "from being seen across the bow."

No further changes of importance appear to have been made in the provision referred to since 1858. Then to continue my answer to a previous question I may say that the Regulations require the lights to be of uniform brilliancy from right ahead to two points abaft the beam, and it is impossible to make such lights as have come under my observation fulfil this condition, except by screening them in such a manner as to permit of some of the rays falling across the vessel's path.

263. (*Chairman.*) Is it possible to screen lights so as to produce a dark lane forward of the vessel, and still retain the uniformity of the light from right ahead to two points about the beam?—No; to produce a dark lane the light would have to be completely masked when viewed from ahead, and the effect of this would be to destroy its uniformity. I have dealt with the matter fully in a letter to Sir Digby Murray, a copy of which has, I think, been handed in.*

264. What is the minimum angle to which lights require to be screened to ensure the condition as to uniformity being complied with?—The minimum angle should be such that the full light will be seen ahead at a reasonable distance from the vessel.

265. What would you regard as a reasonable distance?—That would depend on the state of the weather; but as collisions are more likely to occur in thick than in fine weather it should be as near the stem of the vessel as the other conditions will admit.

266. What are the other conditions to which you have alluded?—The width of wick necessary to give the required volume of light, and the undesirability of making the field in which both lights are seen broader than is necessary.

267. What is the width of field which you consider necessary?—That which is found by screening the lights to 4 degrees.

268. Why do you select 4 degrees?—Because it admits of the full light being seen ahead at a reasonable distance from the vessel, and it also admits of the well-known and useful rule, "Green-to-green, and "Red-to-red, perfect safety, go ahead," being adopted without incurring serious risk of collision. I hand in a table* showing that when the side-lights are 60 feet apart, and screened to 4 degrees, the half breadth of the field in which both lights are seen is only 390 feet at a distance of one mile. Consequently, if two large vessels one mile apart were meeting on parallel courses, and happened to be just outside each other's field, they would fall under the "Green-to-green or Red-to-red" rule, and pass each other at a distance considerably less than their own length apart, and that would, I think, be regarded as a close shave, more especially if one or both of the vessels were square-rigged.

269. Were you speaking of the statute mile or the sea mile?—The sea mile; but in order to shorten the calculations I have taken the sea mile at 6,000 instead of 6,076½ ft.

270. Are the half-breadths given in the table actual measurements?—No. They are found by calculating the distance between two straight lines cutting the outer edge of the chock and the outer edge of the wick of the red and the green lights respectively, these lines being one mile in length.

271. Do the actual distances practically agree with these calculated distances?—Yes,† a copy of the report regarding experiments made by the Superintendent of Experiments at Shoeburyness on behalf of a recent Committee on the Rule of the Road at Sea confirms this statement. That report has, I think, been handed in.‡

272. Are the actual greater or less than the calculated distances?—Less, except at very short distances from the lights.

273. Would these distances have been still less if the lights had not been in all respects in first class condition?—Certainly.

274. How do the actual compare with the calculated distances when the measurements are taken near the lights?—They are generally greater, but there may be defects in the lights which would cause them to be less.

275. Why should they generally be greater?—Because at short distances from the lights, the reflected, or what may be termed the scattered light, is sufficiently strong to be seen.

276. Does the width of the field at these short distances depend on the position of the flame relatively to the screen and chock?—No, it increases with the radius of the lens, and with the illuminating power of the flame.

277. Were the red and green lights which you have seen tested at Shoeburyness distinctly visible at a distance of two miles (12,000 feet)?—No, not to the naked eye. They could be seen through field glasses, but even then they would have been difficult to pick up had there not been white lights near, by which they could be located.

278. Were all these lights in first class condition as regards polish of reflector and lens, trimming of wick, &c., and was the atmosphere favourable for long-distance observation?—Yes.

279. If the weather had been thick, or if the lights had not been in first class condition do you think they would have been visible at two miles?—No, not even with the aid of field glasses.

280. Apart from the necessity of making the lights cross to ensure the degree of uniformity required by the Regulations, do you consider the crossing of the lights at a small angle a desirable or undesirable feature?—I regard it as a most desirable feature.

* *See* Appendix 2, No. 14.

* *See* Appendix 3, No. 1. † *See* Appendix 3, No. 3.
‡ *See* Appendix 2, No. 11.

281. Why?—Because when a vessel gets within the field of mingled rays of another vessel, those on board of her know at once that they are within a few degrees of the other vessel's path, and if the weather is thick they know that their vessel is in a position of great danger, for the vessels would then be very near each other, and the field of mingled rays at short distances is very narrow. In short, the mingled rays of a vessel's side-lights indicate to a vessel ahead, or nearly ahead, the direction in which she is steering, and this is information of a most valuable kind. The field of mingled rays also tend to prevent a vessel right ahead, or nearly ahead, from seeing the red and green lights alternately, owing to the vessel carrying these lights yawing; and this, of itself, is, I think, an excellent feature, because if, owing to yawing, one of two vessels, meeting end on, or nearly end on, showed her green light without the red light, even for a few seconds, those seeing it might reasonably assume, if the vessels were near each other, that the course of the vessel showing the green light had been altered, and thus be led to put the helm the wrong way, and cause the collision which they were anxious to avoid.

282. It is a fact, is it not, that from 1869 to 1892 the lights were screened in such a manner that a line drawn parallel with the middle line of the vessel, and cutting the outer edge of the chock, or its equivalent, should also cut the inner edge of the lens?—Yes.

283. To what angle were the lights then screened?—The angle varied considerably. From my own observations it varied from about 1° to 6°, the average being between 4° and 5°.

284. What was the cause of this great variation in the angle?—It was caused by the wicks being placed at unequal distances from the line cutting the outer edge of the chock and the inner edge of the lens.

285. Who fixed that distance?—The lamp makers; and the Board of Trade Surveyor did not object if the lamp complied with his instructions and his interpretation of the Regulations for preventing collisions at sea.

286. Can you explain why the distance varied?—Yes. Some lamps required the wicks to be placed farther than others from the line cutting the outer edge of the chock, and the inner edge of the lens (line of reference) in order that the light might be seen two points abaft the beam; and another feature, which no doubt tended in many instances to cause the wicks to be placed at the greater distance from the line of reference, was the dirty condition of the outer edge of the lenses of many lamps after being in use some time.

287. But if the lenses had been properly placed and had subtended an angle of 112½ degrees or 10 points, would the angle of screening not have been less than 4 degrees, provided the centre of the wick had in each case coincided with the centre of curvature of the lens?—Yes, but the full light would not have been visible from ahead, and if the lenses happened to have a border of dirt along the housing as many lamps have, little or perhaps none of the light would have been seen ahead.

288. To what angle would the lights have been screened, assuming the lenses to have been clean?—From nothing to 1° 22′, the magnitude of the angle depending on the position of the wick. For instance, if the wicks had been placed parallel with the side of the screen as in the sketch I have here the angle would have been practically nothing, and would have been nothing had the slightest error been made in fitting the screens. On the other hand, if the wicks, (assuming them to have been the broadest now used —1¾ inches) had been placed as shewn in this other figure, that is, vertical to the side of the screen, the angle would have been 1° 22′, and one half of the light would have been completely masked by the chock when viewed from ahead.

289. Would such lights in your opinion have complied with the Regulations?—No.

290. How could they have been made to comply with the Regulations?—By increasing the angular measurement of the lenses, or by placing the wicks between the centres of curvature of the lenses and the lenses themselves.

291. Was the latter alternative the one adopted by the lamp makers?—Yes.

292. Which in your judgment was the better alternative?—The former.

293. (*Sir Edward Harland.*) What was the former?—Increasing the angular measurement of the lenses.

294. (*Chairman.*) You know that sailors take an objection to what they call squinting lights, because they say that a vessel under such circumstances would really have the other vessel on her starboard bow, and yet would see the two lights and have to port, and they think that a condition of danger, or it is suggested it is a condition of danger. What is your view about it?—Provided the angle is sufficiently small I do not see any danger in it at all, in fact I think the crossing of lights a very excellent feature, for the reason I have stated.

295. Of course Article 15 provides that a vessel is only to port when she is end on or nearly end on?—Ahead, or nearly ahead.

296. When she is end on or nearly end on, that is the phrase, and she is end on or nearly end on when she sees both lights. That is the view of Article 15. But, of course, if lights cross, it would become obligatory, would it not, on a vessel to port, even though in point of fact two vessels, if they continued their course, would not meet?—That would be so, unless the conditions were such as to justify the use of the starboard helm, but if the lights did not cross and the commanders of the vessels acted on the "green-to-green and red-to-red" rule the vessels might be so close as to collide.

297. I suppose you would say a vessel would only see another vessel's red and green lights when she was, if not end on, nearly end on?—Quite so.

298. So you would say there was no violation of Article 15 in requiring a vessel to port when she sees both side-lights of an approaching vessel?—Yes, I should say there was no violation of Article 15. I think the term "right ahead," should have a wider meaning than that generally given to it, because vessels have considerable breadth.

299. You mean that when it is said that the lights are to show right ahead, you think that ought to be regarded as right ahead of the breadth of the ship, and not merely right ahead of the lamp?—I certainly think it should extend further on each side of the vessel than right ahead—that is right in front of the stem, because two vessels, especially square-rigged vessels, meeting on parallel courses would collide even if their courses lay considerably more than the vessel's width apart.

300. So that vessels, green-to-green and red-to-red might collide from that point of view?—Quite so.

301. I mean if the lights do not cross at all?—If the lights did not cross at all, there is no doubt that these vessels would collide.

302. Some question arose about the meaning of the words "across the bow." You would not, as I understand it, think it desirable to limit that in such a way as to place it merely across the actual bow or stem of the vessel. You would not think it desirable that lights should cross anywhere about there?—Not at all, although I thoroughly believe that the screens were originally fitted for the purpose of preventing the lights from crossing at or about that point.

303. You think the original rules may only have been intended to prevent the two lights being seen actually across the stem of the vessel?—Quite so, across the vessel itself.

304. Across the bow is hardly the phrase in nautical language which would be used to express the actual stem of the vessel?—No. But I still think the screens were originally fitted to prevent the lights from crossing at or abuft the stem. We have very little idea of what kind of lamps were used in 1847, *i.e.*, at the time the original Regulations were framed. I do not suppose they were lights such as

*Mr. P. Samson.*

3 April 1895.

are used at the present time. It is just as likely as not that they were square lamps, which, if unscreened, would have shown across the forecastle of the ship.

305. Of course if your conjecture is right, that originally these lamps were placed right in the bow very close to one another, then these problems would not really arise—the lamp would be seen ahead for example in that case even though the rays did not cross?—That would depend entirely on the distance between the lights.

306. Supposing the vessel's lights were placed so close to the bow of the vessel that there were only 5 or 6 feet between them?—I do not suppose they were ever placed in a position of that kind.

307. I suppose vessels during the last 50 years have increased considerably in size?—Yes.

308. (*Mr. Ismay.*) In the case of paddle-boats they used to place the lights on the paddle-box?—Yes.

309. Lights were then more used in the coasting trade than in seagoing vessels?—Those Regulations appear to have been adopted first by the Admiralty for their own ships, and then applied to merchant vessels. I think they say so in the early Regulations.

310. And chiefly in paddle steamers in those days?—Yes, but I do not know that the lights were carried on the paddle-boxes of H.M. ships. I should like to draw attention to a letter of Captain Denham's on this subject. It is in parliamentary paper 696 of 1851. He refers to the lights carried in merchant paddle vessels, and calls attention to the objectionable practice of placing them on the paddle-boxes. He also gives a diagram showing a light placed on the sponson where it could not possibly show two points abaft the beam.

311–12. (*Chairman.*) Do you happen to know whether lamps were ever carried abaft the beam of the vessel?—I have seen them carried almost abreast the mizen rigging in sailing vessels, in fact, carried in all sorts of places in some of the small vessels. I know the Board of Trade have for many years been endeavouring to get lights carried further forward.

313. What is the smallest angle which, in your judgment, would enable the lights practically—I do not speak in theory—but practically, what, in your judgment, is the smallest angle which would allow the full volume of the light fairly to be seen ahead; would two degrees do it?—I think not; a larger angle than that is required. It is difficult to answer the question, because a great deal depends on the width of the wick. There is great variety in the width of the wicks; they vary from two inches to three-quarters of an inch, and to get the full volume of the light from the broad wicks you require a larger angle. If all the lamps had powerful narrow wicks the angle could be reduced somewhat, but to cover all cases, I do not think you could do better than adopt the four-degree angle.

314. How do you manage in regard to the electric light?—We take the outside of the wire instead of the outside of the wick.

315. (*Mr. Bolam.*) What is the usual diameter of the filament from the outside to the inside in the incandescent?—I am not prepared to say exactly, but the loops are generally from about seven-eighths to one inch in diameter.

316. They use specially made lamps in some cases, do they not?—I have not seen them; I know they have special lamps for photographic purposes.

317. I am meaning with regard to the diameter of the filament?—Quite so, the loop of the filament is much narrower in the lights used for photographic purposes.

318. (*Mr. Ismay.*) In narrow waters, with a strong tide running and a long ship coming up, does the finer screen not give an advantage over the broader screen?—No, I think not.

319. Has not an approaching ship to give more helm under a system of broad screening than under a system of fine screening?—I am not familiar with any waters in which the four-degree screening would be at all a disadvantage, but if there be such a channel frequented by shipping, those in command of the vessel using it would, I think, be guided by Article 21 of the Regulations, and would consequently keep to the side of the fairway lying on the starboard side of their vessels. The four-degree screening only amounts to this: at a distance of two miles from the vessel half the width of the field in which both lights are seen is only about one and a third times the length of the s.s. "Campania." That is all it amounts to, and at that distance, viz., two miles, you cannot see the lights with the naked eye unless they are exceptionally good ones and the weather is exceptionally favourable. I wish you gentlemen could see some experiments at Shoeburyness; they are really very instructive.

320. Why do these pilots and others take such exception to the four degrees?—Well I think the pilots had no idea that the lights crossed at all until the last revision of the instructions to surveyors was issued. That, I think, is why they took exception to it. They might have to give the ship more helm in the case of broader screening than with the narrower screening, but at most it would be a mere trifle, and in practice it would, I believe, not amount to anything.

321. Then if it is so little why do you alter them?—To insure uniformity.

322. But if there is so little when ships are screened at two degrees why alter them to four degrees?—We have reduced the angle in many cases instead of increasing it.

323. In some cases you have increased it?—Yes, but on the whole we have reduced the angle.

## Thursday, 4th April 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HUGHES HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

Mr. PETER SAMSON recalled and further examined.

*Mr. P. Samson.*

4 April 1895.

324. (*Chairman.*) Can you tell me what is the practical variation in the breadth of the wicks of lamps as you find them in practice?—They vary considerably.

325. I wanted to know what the variations were?—They vary from 2 inches down to $\frac{3}{4}$ inch. There are very few $\frac{3}{4}$ inch wicks, and the 2 inch ones are getting rather rare.

326. So that they are practically getting down to something like an inch?—Yes; an inch and an inch and a quarter in some of the larger lamps that are being made for burning paraffin. If they use colza a very much larger wick is required, in fact, I believe that inch and three-quarters is rather little.

327. For practical purposes may one take it that an inch to an inch and a quarter in your judgment gives sufficient light?—With paraffin, certainly, the lamp being of a good make.

328. In your judgment that is sufficient wick?—Yes. That is sufficient wick if the lamp is a good one.

329. I mean supposing it was desirable—I do not know whether it is or not, we shall see as to that—to prescribe a breadth for the wick of a lamp in reference to screening. Supposing it was right to prescribe a breadth for the wick, do you think an inch to an inch and a quarter would be a safe and proper limit for it?—I think a very good lamp could be made with a wick of that size, but I do not mean by that that all lamps would show the required distance with that width of wick.

330. But good lamps would?—Good paraffin lamps would, if provided with chimneys.

331. Now I should like to know what is the limit within which the lamps show their full light?—Abaft the beam it varies from about half a point to a point, according to the width of the wick, and ahead it varies from about $1\frac{3}{8}$ degrees to $3\frac{1}{8}$ degrees, in cases where the inner edge of the wick is in line with the outer edge of the chock.

332. I am afraid for the moment I do not quite follow that. I do not quite see why it is different ahead from abaft the beam. You say that abaft the beam it might exceed the proper distance as much as a point?—Yes, quite so.

333. Why does it not exceed the distance ahead as much as a point?—Owing to the screen and to the position of the wick it shows differently. If you will allow me I will hand in a diagram here that fairly represents some of the lamps made prior to 1892. It is not made from an actual lamp, but it fairly represents many lamps that were made prior to the date named.

334. You say, "This diagram fairly represents "some of the port side lights that were made prior to "1892, except as regards the reflector, which is of "the pattern recommended in the present instructions "to surveyors. It also shows wicks 1 inch, $1\frac{3}{4}$ inches, "and 2 inches wide respectively, and the changes "which the alterations in the size and position of the "wicks produce, the screen, 3 feet long, being parallel "with the keel, and its outer face in line with the "inner edge of the lens." And you give the angle of screening with 1 inch wick, 3° 53′; $1\frac{3}{4}$ inch wick, 4° 23′; 2 inch wick, 4° 40′. Now let me understand this. The wicks are placed parallel to the chord of the arc. Will the light show past the housing of the lamp?—Yes.

335–6. You think it would exceed two points abaft the beam by very nearly a point?—Yes.

337. Now I want to see how the two rules relate to one another. First, the rule to show an unbroken and uniform light 10 points, and then to see what is the effect upon that of the subsequent rule as to screening. I want to start with this: What is the effect of a lamp, supposing no screening is used?—That lamp would show considerably over 10 points.

338. You say that a lamp made in this way would not comply strictly with the rule as to the two points abaft the beam, but would give an extra point or so?—Yes.

339. What would be the effect in the direction ahead of the ship?—The effect would be enormous in this particular case.

340. And enormous in almost any lamp you could make?—Yes, unless the lens could be shifted round.

341–2. You could so shift the lens as to practically effect something like the operation of screening?—Quite so.

343. Supposing there was no rule as to screening, do you think a lamp could be made to show an uniform and unbroken light over 10 points and no more?—No, I think there is no possibility of that.

344. No possibility that the light shall be uniform and unbroken?—Quite so.

345. I should like to understand how that is. Suppose you had a lens coming to the inner edge of the wick?—In that case the width of the wick would equal the tangent of the angle which the light would show across the bow.

346. Then there would be an uniform and unbroken light over more than 10 points if the inner edge of the lens were in line with the inner edge of the wick?—If the inner edge of the lens were brought in line with the inner edge of the wick then that lamp would show an unbroken light over 10 points of the compass, but it would show considerably more.

347. So it would not show an unbroken light?—It would show an unbroken light over the 10 points, but it would show considerably more than the 10 points.

348. It would show an uniform and unbroken light over the 10 points, and something more, but fainter over a larger area?—Yes, quite so.

349. The same abaft the beam?—Yes.

350. Would it apply, too, before the beam as well as abaft the beam?—Anywhere before the beam you would have an uniform light.

351. Supposing that we had the solid material of the lamp brought up to the inner edge of the wick, then the effect would be, in theory, at any rate, that the volume of unbroken light would be thrown ahead; but, as you say, there would be side rays which would cross ahead of the ship?—Yes.

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352. It would be possible in the same way, would it not, so to regulate the length of the lens that the uniform light would show two points abaft the beam and no more?—Quite so.

353. (*Mr. Ismay.*) Would you get the full 10 points?—You would get the light uniform for the 10 points, and a diminishing light beyond that until it vanished altogether.

354. (*Rear-Admiral Andoe.*) The object of the screen is then to regulate these diminishing rays?—Yes. Of course it would be very undesirable to make lamps of the kind you are considering, because, as I have already stated, many lamps have as much as half an inch of thick dirt near the housings, which of course would cut off an enormous amount of the light.

355. (*Captain Thomson.*) In the direction abaft the beam?—In both directions.

356. (*Chairman.*) If the effect could be produced by the mere construction of the lamp, why do you think the provision was added about the screen?—Let it be assumed that we have the ideal lamp we have been picturing. Well, if it have a wick which stands out an inch from this line (line of reference) the rays from the outer edge of the wick would show across the bow of the ship at an enormous angle owing to the radius of the lens being small, and to reduce that angle you fit a screen with a chock.

357. (*Captain Thomson.*) You need not have that angle?—We are speaking of this ideal lamp.

358. (*Chairman.*) I want to know with what object it is to be supposed the person who drew these rules added the regulation as to screening. If one found that everything could be done by means of the lamp, one does not see why they added the screen. The suggestion is that the screen was added to prevent the rays from the outside of the wick crossing at too great an angle. That, you think, was the motive of it?—Yes.

359. And then, of course, there is the suggestion that in a lens of that comparatively small size you run considerable risk of the edge of the lens getting dirty?—Quite so, and in the early days I am not at all sure that they had lamps of this particular kind.

360. No, I suppose not?—In the Parliamentary Paper I referred to yesterday, No. 696 of 1851, some square lights are shown, with flat glass in front and at the side. The Board of Trade inspector in the same paper complained of the lights then used.

361. (*Captain Thomson.*) Would a lamp be considered in good order if it had a line of dirt on the lens?—No.

362. (*Chairman.*) I suppose if a lamp is exposed for a considerable time to the sea it gets more or less encrusted?—Yes, with salt; but they get dirty from neglect. The men rub the main part of the lens and leave the corners uncleaned.

363. That is no fault of the lamp?—Oh, no.

364. (*Rear-Admiral Andoe.*) You could not then construct a lamp that would efficiently cut off the rays of light at a desired angle without using a screen?—No, not at all.

365. Because the side of the lamp is so short?—Quite so. Those who framed the rules were not very particular as to the terms they used. For instance, they laid down a regulation that an anchor light was to be carried, which was to show an uniform light all round the horizon, although they must have known that the funnels and masts of steamers would cut off large portions of it.

366. (*Chairman.*) But still the Regulation as to screening itself is obviously a very rough one?—No doubt.

367. Because, although it prescribes the length of the screen, it nowhere prescribes whether it is to be parallel to the keel or not, nor does it prescribe the distance from the lamp?—Quite so.

368. Both of which things make a considerable distance?—Yes; as you will see from the diagrams in the early editions of the Board of Trade Instructions to Surveyors. It is perfectly clear from the diagrams that the screens, fitted prior to 1868, were simply plain boards put along the inboard side of the lanthorn.

369. Plain boards or even canvas?—Yes.

370. (*Rear-Admiral Andoe.*) In your evidence I think you stated that the rays should cross the bows as near as possible?—The rays from the inner edge of the wick should cross at a reasonable distance from the stem. In order that each light may be uniform throughout the 10 points of the compass, that is from right ahead of the stem (not ahead of the light) to two points abaft the beam.

371. Therefore the light, that is, the inner rays, should cross as near the stem as possible?—I do not mean anything within the eighth part of a mile in the case of a large vessel; when a ship gets so close that a collision is inevitable the position of the crossing point of the inner rays is a matter of no importance.

372. But I think you said that the side lights ought to be fitted so that their converging rays should cross as near to the bows as possible?—Yes, I said so; but when the angle at which the rays from the outer edges of the wicks cross is fixed, the distance from the stem at which the rays from the inner edges of the wicks cross varies with the distance between the lights as well as with the width of the wicks.

373. Well, in the instructions to surveyors of 1868 it is said that the two points to be studied in fixing and arranging the inboard screen appear to be, first, to ensure that the rays of the red and green side-lights do not cross each other immediately on leaving the ship, nor at all, more than is possible?—Yes. That instruction refers to the rays from the outer edges of the wicks.

374. It does not say so in the instructions?—That is what is understood. If you will allow me, I will hand in four tables,* showing the distances from the lights at which the rays from the inner edges of the wicks cross, the width of the wicks varying from $\frac{3}{4}$ inch to $1\frac{3}{4}$ inches, and the distance between the lights varying from 20 to 70 feet.

375. In the case of the lights crossing near the stem of the ship there would be no dark lane at all?—None whatever.

376. (*Chairman.*) Take the case indicated in this table?—In this particular case the inner rays do not cross at all, because the inner edges of the wicks are masked by the chocks.

377. With what angles of screening does this take place?—With the 1 degree screening.

378. All this is screened to 1 degree?—Yes. In this case the rays do not cross.

379. You mean they do not cross the projected line of the keel?—Quite so.

380. (*Rear-Admiral Andoe.*) Do you mean that no rays cross at all?—No. The outer rays cross.

381. (*Chairman.*) But not the full light?—Not the full light.

382. So that if you screen to 1 degree the rays from the inner edge at a mile are 31 feet away of the centre line?—Quite so.

383. In other words, the dark lane at that point is 62 feet broad?—Yes, if it can be called a dark lane.

384. (*Rear-Admiral Andoe.*) It is not absolutely a dark lane, because you get certain rays from the outer edge of the wick?—Quite so.

385. (*Chairman.*) With lights screened to 1 degree, you do not get an unbroken light straight ahead of the stem of the ship?—You cannot get it.

386. (*Rear-Admiral Andoe.*) Mr. Samson, you seem to ignore all rays except those from the inner edge?—No; my object in preparing this table was to show the effect of the screening on the rays issuing from the inner edges of the wicks. That is all.

387. (*Chairman.*) Now, taking lights screened to 2 degrees, the unbroken light in the strictest sense shows straight ahead of the vessel?—Yes, at that point. In that particular case you would see the full light on the middle line, at three-quarters of a mile from the stem.

* *See* Appendix 3 No. 2.

388. (*Rear-Admiral Andoe.*) How far off would the modified rays cross?—You will see that from the other table I have handed in.

389. That is the important point, that the light should cross close to the stem?—Yes.

390. Lights screened to 2 degrees do, for practical purposes, show an unbroken light straight ahead of the keel of the vessel?—No. When you come down *here* where the wicks are 1¼ inches wide the rays from the inner edges of the wicks do not cross at all; there is a sort of darkened lane in that case. You see the figures are uniform throughout.

391–7. So when you screen to 3 degrees, or even to 4 degrees, you do not in every case by any means show an unbroken light straight ahead of the vessel?—That is so, except at considerable distances from the vessel.

398. Even 4 degrees does not give you an unbroken light straight ahead of the vessel everywhere?—No. But with narrow wicks screened to 4°, the rays from their inner edges cross at a reasonable distance from the vessels. That was what I meant by saying the rays from the inner edge of the wicks should cross near the ship.

399. Yet it says in the instructions to surveyors, if they see the lights cross each other they should of course have the defect remedied?—That is not in our present instructions; that is in some old copy. At the same time you will find directions as to the screening of the light; it is stated that the inner face of the screen must be in line, or should be in line with the inner edge of the lens.

400. You are speaking of the inner edge of the lens?—Yes, it was required to be in line with the face of the screen or the outer edge of the chock.

401. According to your experience has it been always the case that the lights are so placed and screened as to be able to be seen across the bow of the ship?—That has always been the practice.

402. Always been the practice?—Yes.

403. About what distance ahead of the ship do you think, from your practical observation?—It varies with the size of the ship.

404. Have you noticed in American liners, is it very close to the bow or is it 100 yards or 200 yards, roughly?—Well, when the lights were screened to about 4 degrees the lights crossed at between seven and eight times the distance between the lights.

405. Is it possible to check these screens by actual observation of the lamps?—It is not convenient to do that in the merchant service.

406. Do you trust entirely to placing them?—Yes, to measurement.

407. And they are not tested as a matter of practice?—Not as a rule.

408. (*Chairman.*) The practical difficulty of getting a mile ahead of the ship would be very great?—Yes, there would be a difficulty in getting the ship into a proper position.

409. That is the reason why it is important to have a definite rule, if possible, as to the angle to which they should be screened?—I think the fixing of the angle a very excellent feature.

410. (*Rear-Admiral Andoe.*) Was it to ensure that the angle should be uniform and not excessive that the Board of Trade fixed it at 4 degrees?—That was so, and after the angle was fixed we found that it was less than the average angle at which the lights had previously been screened.

411. So that really in defining it as 4 degrees, no new practice has been adopted, except to limit the range?—Not at all.

412. Is that right?—That is so.

413. (*Sir Edward Harland.*) You do not know when what were called bow lights were put in vessels in the early days?—No.

414. Now with reference to the distance at which the lines of light crossed each other in, say, 1848, when the rules were first introduced. What do you think was the distance ahead of the ship at which the respective rays from the two lights really did cross each other—if they did cross each other at all?—In the case of paddle vessels the lights must have crossed just under the bowsprit—that is close to the stem.

415. So that, practically speaking, there might have been cases where the lights did actually cross the stem of the ship?—Yes, when the lights were not carried on the bows of the vessel it is highly probable that in many cases they crossed abaft the stem.

416. Was there ever a time when the lights were fitted without screens; is there anything in the history of side lights showing that there were lights without screens?—I have not seen any record of anything of that kind.

417. (*Chairman.*) The Admiralty paper of 1847 said screening was first provided for by those Regulations?—The first Regulations issued by the Admiralty contained the provision as to screening.

418. (*Mr. Ismay.*) Was there not a time when the side of the ship was used as a screen for the lights, and answered all the purpose?—I have not seen any record of it.

419. It was the fact?—Yes, that is doubtless so, for I have seen a modification of it in Her Majesty's Navy. I have myself seen some ships with the screens worked out of the bulwark rails.

420. (*Rear-Admiral Andoe.*) Recessed expressly?—Yes.

421. (*Sir Edward Harland.*) Assuming, then, that this screen, in the early days, was simply a plain straight screen that was placed parallel with the keel, without chocks at the forward end, and taking the ordinary class of side light which was in use at that time, what would you say was the angle at which the light from the two lamps crossed, at what angle did they cross the bow?—I do not quite follow.

422. First, may I ask about what date were chocks first introduced?—I believe about 1868 or 1869.

423. Before chocks were introduced at what angle do you think the lights actually crossed the bow?—About 9 or 10 degrees.

424. Then for years the rays actually crossed the bow at an angle of 9 or 10 degrees?—Quite so.

425. Can you give us any idea as to the reason for placing chocks at the end of the screens?—No doubt it was with the object of reducing the angle.

426. To what?—That was not stated.

427. Then what was to guide the surveyor in each port? First he was told that the original screening was unsatisfactory, and he was told to put a chock there; had he nothing whatever to guide him as to the breadth of chock which was to be fitted in each case?—The breadth of the chock was to equal the distance from the outboard side of the screen to the inner edge of the lens.

428. Was the position of the lens referred to in these early instructions; the position of the lens varies enormously, even in the drawings laid on the table?—These early instructions were no doubt imperfect in that and other respects.

429. Measurement is not now taken from the lens?—Measurement from the lens as affecting the screening has been abandoned in the present instructions.

430. Here is the drawing of the lamp. The distance from the inner edge of the lamp is so much. When we turn to this other drawing we find that the one lens has all that much of difference [*measuring on the drawing*]?—Yes.

431. (*Captain Hallett.*) Are those drawings the same scale?—The one I handed in is a full-size drawing.

432. (*Sir Edward Harland.*) Now, here is this other drawing. This lamp, although a larger lamp, shows so much. Now, here is a smaller lamp, which shows so much more; would you advise the Committee not to receive or treat any of these lens drawings with any degree of confidence?—What I think should be done is to make the lens subtend an angle of about 130 degrees, and fix its after end so as to show two points abaft the beam. All the surplus lens would then fall towards the inner side of the

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lanthorn. By that means you would get rid, to a great extent, of the bad effects of the border of dirt that is frequently found on the lenses.

433. (*Captain Hallett.*) But you must alter your line of reference—your line of reference is a reference to the inner edge of the lens?—That is all right now. I am speaking of the new instructions. We have had some difficulty in getting lenses with 130 degrees, but what is wanted is to carry that lens round another inch *there*, and trust entirely to the chock for the screening.

434. (*Rear-Admiral Andoe.*) Then you would regulate the chock by the wick?—Yes. The only object in fixing the end of the lens in this position is that it saves us putting a screen and chock *there* to prevent the light from being seen more than two points abaft the beam. If we carried the lens to *here* we should have to put a screen and chock *there*.

435–6. (*Sir Edward Harland.*) The light shown abaft the beam varies according to the angle which the two edges of the wick make with the after edge of the lens?—Quite so. If the lamp is constructed so that the centre of the wick lies in this line, *i.e.*, the line drawn from the centre of curvature of the lens to two points abaft the beam, then it would show beyond the two points.

437. Well, your opinion is, it would be well to conform, as far as we can, to the two points abaft the beam, but that by reason of their being no screen at the after end of the lamp the light shown abaft the beam varies considerably from no other consideration than that the lamp must have a wick?—Yes.

438. Then while we may go to refinements, and perhaps necessary refinements, in the direction of the light forward, you think that the Committee need not trouble itself with anything like a refinement with reference to the two points abaft the beam?—Having in view the Regulation requirements it is, I think, desirable to have the lights showing not more than two points abaft the beam, but otherwise a greater angle would not, I think, be objectionable provided all lamps were alike in this respect. I should like to take the power of fixing the position of the wicks out of the lampmakers' hands, and to be able to say to them that the wicks must be placed in a certain position.

439. Would you advise that the lights should be shown most powerfully ahead?—Yes.

440. Then to obtain it in the most perfect way, would you recommend placing the wick at right angles to the keel?—Yes.

441–2. That is to say, make the light from the two sides of that wick less varied?—Quite so.

443. That is to say, if you place the wick vertical to the screen, then you get the greatest light forward, and it reduces the difference produced by the width of the wick to very moderate limits?—Yes.

444. You can place the wick so that it will just cover the two points abaft the beam?—If you placed the wick exactly in that position the light would be liable to be masked by the dirt on the lens.

445. It would make the angle too precise?—Yes.

446. You would rather recommend placing the wick athwart ship?—Athwart ship gets over that difficulty, and we get a better light forward.

447. (*Chairman.*) What rule would you lay down as to the position of the wick in regard to the lens?—I would make the centre of the wick coincide with the centre of curvature of the lens, and place the wick at right angles to the screen, the screen being parallel to the middle line of the vessel.

448. (*Mr. Ismay.*) Do you think it would be desirable that the Board of Trade should have the power of seeing it was always done)—Yes.

449. (*Sir Edward Harland.*) Referring to the question of lenses, is it your experience that they magnify or reduce the rays of light?—We have passed many lamps with what we call "fish globe" lenses. These lenses do not concentrate the light in any way.

450. Do you find these lenses, these glasses I should prefer to call them, magnify the light?—No; the light is not intensified on account of the curvature.

451. I put the question for this reason. It might be desirable for this wick to be placed in the centre of the curvature or for the lens to be placed exactly with the wick as a centre; would you prefer that?—It is quite immaterial.

452. But if the lens were a magnifying glass, would it be immaterial then?—The lamp makers would in that case require to alter the curvature of the outer face of the lens to suit the position of the wick.

453. Here are four diagrams you have put in, and I notice the inner side of the wick is at an angle of something less than 1 degree with the chock?—Yes.

454. This dotted line shows that the angle of the light from the inner edge of the wick is a little less than 1 degree?—Quite so.

455. So that in this lamp with the same length of screen and the same breadth of wick there is a difference, possibly of 3 degrees?—Yes.

456. From the same wick?—Yes.

457. And in the same lamp?—Yes.

458. Then the full light could not be observed until the ship crossing the bow was so near that the 1 degree line would cross the other 1 degree line. Does your drawing show 1 degree?—No, I think not.

459. At what distance ahead would the whole light be visible?—I have here some tables which show that if the ship were 20 feet broad the rays would cross at 573 feet; if the ship were 30 feet broad they would cross at 860 feet from the light; and if the ship were 40 feet broad they would cross at 1,146 feet from the lights.

460. What would cross?—The rays from the inner edges of the wicks. With 50 feet between the lights the rays would cross at 1,433 feet from the lights; with 60 feet between the lights they would cross at 1,719 feet from the lights; and with 70 feet between the lights the distance from the lights to the crossing point would be 2,006 feet.

461. (*Sir F. Evans.*) If the crossing point for 1 degree is 1,719 feet, where would it be if the lights were screened to 4 degrees. I want to find out at what point ahead the light ceases to be seen when you approach it?—Quite so.

462. (*Chairman.*) Take it at 4 degrees?—With 20 feet between the lights the distance is 144 feet.

463. (*Sir F. Evans.*) And with 60 feet between the lights?—429 feet.

464. That means that there is a line of 1,290 feet during which the light would be gradually disappearing?—Yes.

465. (*Chairman.*) Take a vessel 60 feet broad, with ordinary wicks screened to 4 degrees?—The rays would cross at 429 feet from the lights.

466. Which rays?—The rays from the outer edges of the wicks. What I thought you wanted was to get the distance from the lights to the point at which the outer rays cross the middle line. In the case you are considering that distance is 429 feet, and the distance from the lights to the point at which the rays issuing from the inner edges of the wicks cross is 1,719 feet.

467. (*Sir Edward Harland.*) Is this 1,719 feet practically correct as representing the point at which by a theodolite you would just see the inner edge of the wick?—I think it is practically correct.

468. In other words, it amounts to this, that if you were standing at that point, looking at the ship, you would at this distance just see the entire light?—Yes, quite so.

469. (*Sir F. Evans.*) That is at the 1,719 feet from the lights?—Yes, at that point you would see the full light.

470. And the light would entirely disappear at the 429 feet distance?—Yes, all the direct rays would disappear.

471. (*Sir Edward Harland.*) At what distance from the ship do you think the full light ought to be seen?—I think the rays from the inner edges of the wicks should cross as early as possible.

472. That means at as short a distance as possible?—At as short a distance from the lights as may be practicable, and that would be obtained by getting a small powerful light.

473. Then are you in favour of the light from the outer edge of the wick crossing the bow at an angle of 4 degrees?—I am.

474. And you think that for practical purposes 4 degrees from the outer edge of the wick and about 2 or 2¼ degrees from the inner edge would be what you recommend?—We are now dealing with the outside edge of the wick.

475. If the angle from the outer edge was 4 degrees what would be the angle from the inner edge?—1⅛ degrees in the case of the 1¾ inch wicks.

476. So that it amounts really to this, this 4 degrees resolves itself into something like 1⅛ degrees from the inside of the wick?—Yes, with that size of wick.

477. And with this recognised plan of screening, that is, with chocks?—Quite so; of course we make the chock to suit the position of the outer edge of the wick.

478–9. (*Sir F. Evans.*) It would simplify matters very much if you were to take the wick and find out what difference was made by each change in its width. What is the width of this wick?—This wick is an inch and three-quarters wide.

480. What we want is rather to find out the point at which the lights disappear?—The tables I have handed in give you all that information. For instance, with 4 degree screening in the case of a ship 20 feet wide, the direct rays disappear at 144 feet from the lights, that is to say, the outer rays cross at that point; then if you take the beam of the ship at 70 feet, you will find by referring to the table that the outer rays cross at about 500 feet from the lights.

481. (*Sir Edward Harland.*) If you were not quite 500 feet from the lights, would you see the full strength of the light?—No.

482. (*Chairman.*) Is there any light seen?—Yes, within the distances I have given there is what I call scattered light to be seen. It is due to the internal reflection of the lens, and appears over the whole surface of the lens. The lens, in short, is a liminous surface emitting a faint light which can be seen at short distances.

483. (*Rear-Admiral Andoe.*) The triangle which is formed by the meeting of the outside rays is, with the exception of this scattered light, in complete darkness?—Quite so.

484. What length in that dark triangle would you consider safe?—As far as the dark triangle itself is concerned, I do not think it is of very great importance. With our rules the length of the triangle varies from 144 feet to 501 feet. But what we thought of very great importance was to fix the width of the field in which both lights are seen—to make its width constant or nearly constant for all vessels—and of course to do that the angle of screening from the outside edge or the wick had to be fixed.

485. We have heard practical people say that they do not mind very much within a very large limit indeed how long that dark triangle is; in other words, they do not attach much importance to seeing one light or both lights when they are pretty close?—I am quite prepared to hear that. Indeed, it is highly probable that you may find witnesses who will say that they do not object to the dark triangle extending even to 2 miles.

486. That is exactly what I wanted to know your view about?—My view about that is that the angle should be a fixed one, and I think, after giving this matter very great consideration, that the 4 degrees angle is the very best that could be adopted. I may tell you that we started with the thought that 3 degrees would be the better angle, but after making experiment at Glengall and Shoeburyness it was thought desirable to increase it to 4 degrees.

487. (*Mr. Ismay.*) When you first went into the matter the chief object you had in mind was to fix upon some uniform rule I suppose?—Quite so.

488. And the result of this experiment was, you thought it desirable that the angle should be 4 degrees not 3 degrees?—Yes, that is so.

489. If the difference is so small, why should you object to the 2 degrees?—Because I think the green to green and red to red rule a very excellent one, and one that should not be broken into on any account, and I think that in order to keep that rule intact you want the 4 degree screening.

490. It is to avoid throwing a man out of his track?—At 2 miles it is the greatest difficulty to see even a very excellent light on a very favourable night. I do not believe that any navigating officer would ever think of porting his helm at 2 miles, because the lights at that distance are so very feeble. I think it is more than likely that he would hold on until the lights became more distinct, and then he would either be out of the field in which both lights are seen, or the approaching vessel would be very considerably less than 4 degrees on his bow.

491. Would not good lights be seen high up on the bridge? Some bridges are very high out of the water, as much as 40 feet, are they not?—I do not think that would make much or any difference.

492. (*Sir F. Evans.*) Two vessels steaming at 20 knots would cover two miles in a minute and a half?—In 3 minutes.

493. (*Rear-Admiral Andoe.*) You can see good lights much further. I have seen them come on the horizon?—They cannot be seen further at Shoeburyness, unless under exceptionally favourable circumstances.

494. Right up?—No, Admiral Bowden-Smith stated at the Washington Conference that he had very great difficulty in seeing the electric lights of the fleet at 2 miles. Now those lights are very much more powerful than the oil lamps in the Navy, and the lights supplied to the Navy are superior to most of those in the Mercantile Marine.

495. (*Mr. Ismay.*) As a matter of fact the Dublin boats running between Holyhead and Queenstown are screened at 2 degrees; I suppose you know that?—No, I do not.

496. And one of the captains who was at the Washington Conference gave evidence to that effect, and he is a man who has had very great experience in crossing the channel, and he was strongly of opinion that the 2 degrees was safer than the broader 4 degrees?—I have no doubt there will be a considerable difference of opinion on that point.

497. I want to get your opinion about it?—But I do not know whether the gentleman referred to has ever made any experiments.

498. What I want to get at is this, whether you think the practical experience of those who have been in charge of ships, or the experiments which you have conducted under favourable or unfavourable circumstances should weigh most in the mind of the Committee?—I should say the man who has had great experience at sea, and who has had the other experience as well, would be the best man to guide you.

499. (*Sir F. Evans.*) Is it not possible that this captain may have thought his lights were screened to 2 degrees when they were really screened to 4 degrees?—I think it very likely that it was so. I remember getting some rather interesting information regarding a matter of that kind a little time ago. I went on board a ship, and was told by the superintending captain that the lights of all his vessels were screened to 2 degrees, and that 2 degrees was sufficient. But on measuring the electric lights of that vessel I found them screened to 5¾ degrees, and my friend was quite satisfied with them, although he was one of those who had joined in the outcry against 4 degree screening.

*Mr. P. Samson.*
4 April 1895.

500. (*Mr. Ismay.*) What objection would you see to the 2 degrees in open water?—I do not think the 2 degree screening would admit of the green to green and red to red rule being complied with with safety.*

501. That is your only objection?—There is the further objection that if they put in broad flat wicks they would not get the uniform light required by the Regulations, nor would they get a good light ahead—the experiments at Shoeburyness prove this. If they had small circular wicks the 2 degrees screening might be satisfactory so far as the uniformity of the light is concerned, but it would not be satisfactory under all conditions.

502. To put it shortly, if you could get good lamps, all screened to 2 degrees, you would think a considerable step had been made in the direction of safety?—I think the green to green and red to red rule a very important one, and it would be a great step back if you were to break into it. At present if you see a green light without a red light anywhere on the starboard side of your vessel, you know that that vessel will pass you at a safe distance, and that would not be so under all circumstances if 2 degree screening were adopted.

503. (*Chairman.*) You say this is practically important to have?—Yes, very.

504. It is the duty of the man when he sees the light, not merely to keep his eyes upon it, but to act?—Yes.

505. Then when he saw the green light a little on his starboard bow coming on, not broadening in the least, but coming on and getting narrower and narrower, any careful officer would say, this is a vessel I must act for?—If he had fine weather and plenty of time that would be so; but in dirty weather ships get very close before the green lights are seen; and he might even see more than one green light at the same time.

506. Still you must keep your eye on the vessel?—Yes. An anxious officer would keep a sharp look-out.

507. (*Mr. Ismay.*) How would the 2 degrees affect it in this way. Just point it out, so as to give us an idea?—Take a ship having a beam of 60 feet, and let another ship of the same beam be meeting her on a parallel course, then, by referring to the table, you will observe that when half a mile apart these vessels might see each other's green light without a red light, and yet collide or pass at a dangerous distance from each other if they kept their respective courses. Half the breadth of the field in which both lights are seen is only 23 feet at a quarter of a mile from the lights, and at half a mile it is only 75 feet. Moreover these may be regarded as the theoretical distances; the actual distances would generally be less.

508. That is, if two ships were to get within a quarter of a mile of each other in thick weather, the 2 degree screening would not do?—Yes.

* *See* Question 540.

## Wednesday, 24th April 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Captain HALLETT.
Sir EDWARD HARLAND.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

Mr. PETER SAMSON recalled and further examined.

*Mr. P. Samson.*
24 April 1895.

509. (*Mr. Bolam.*) Is it possible to have one rule for screening lights for inland navigation and another for ocean-going navigation?—What do you mean by the term inland navigation?

510. Under local authorities; could you have moving screens in fact, so that the screens could suit the river navigation in the Thames here, for instance, and then could be altered for ocean navigation afterwards?—It would be very undesirable to have two systems.

511. So that, practically, the rule for screening which is adopted under the Merchant Shipping Act must apply to inland waters under local authorities, whether they like it or not?—It would certainly be most inconvenient to alter the screening when a vessel came into a river. But the rules covering river traffic would, I think, prevent any danger arising from the ocean system of screening.

512. There seems to be a good deal of confusion in the phraseology of the literature upon the subject. I suppose there is no means of clearing that up. For instance, "light" seems to mean four things. It seems to mean sometimes the lantern, sometimes the wick, sometimes the lens, and sometimes the flame?—The expression "light" is generally applied to the lantern, including the lamp, but it frequently means the flame only.

513. But so far as your department is concerned your expectation certainly is that the outside of the chock and the inside of the lens were fore and aft of each other?—That was the regulation as to screening from 1869 to 1892.

514. Previous to the 4° angle?—Quite so.

515. And you expect that is the practice at the ports?—That was the practice, no doubt, at the various ports prior to 1892.

516. Then you put in—or Sir Digby Murray did—a table of lamps, which apparently were in stock, and the table showed quite clearly that if the screening was carried out in the way the instructions direct the average angle would be about 4½°?—Yes.

517. So that from that point of view your angle would be reduced from 4½° to 4°?—Yes, to 4°.

518. As regards the actual screening which has occurred at the different ports, the only direct information we have upon the matter is in the table of ships which Sir Digby Murray, I think, put in. It gives details of screening of a number of vessels at Liverpool and London previously to the 4° angle being applied to them?—Yes, but there are other tables and reports on that subject. The reports have been handed in.

519. I think about 379 of the vessels?—Yes, in the table to which you have referred.

520. Of those about 118 were screened with either one or both lights over 4°?—Yes.

521. The vessels in which one or both lights were screened to 4°—either one to 4°, or the other to 4° or

less than 4°—was 87, and the number of cases in which both lights were screened to less than 4° was 174?—Yes.

522. So that you see the practice, at any rate as shown by that table, scarcely shows that the instructions of the Department have been carried out. You have 174 vessels with both lights screened to less than 4° out of 379?—I do not think that you are justified in drawing that inference from the figures. That difference was owing to the construction of the lanterns. No doubt all those lights had been screened at one time in accordance with the old instructions, *i.e.*, the outer edge of each chock had been in line with the inner edge of the lens.

523. No doubt; but it comes to this, that 174 out of 379 had their lights practically screened at an angle of less than 4°. The outside of the wick makes a less angle than 4° to the outside of the chock?—Yes.

524. Does not that seem to show that the general public, who, of course, cannot tell precisely what the departmental instructions are, have reasonable grounds for saying that, in a great number of cases, the Board of Trade practice has increased the angle?—Certainly, they are justified in saying that. But you have taken only one table; the other tables* show that the angle has been decreased in more cases than it has been increased.

525. I quite understand this is a scratch table of ships?—Quite so; when you get the other tables and reports before you, you will find that we have decreased the angle oftener than we have increased it.

526. At any rate, the statement that the Board of Trade have decreased it all round is not correct?—No. But on the whole we have decreased the angle.

527. In this table the number of lanterns which have been decreased in practice under your own rules seem to be very large; 174 in 379 is not quite 50 per cent., but very near it?—Quite so.

528. So that, just judging from this list, 87 vessels would be left alone, 118 would have the angle reduced, and 174 would have the angle increased?—Yes.

529. It has been said that the masters and pilots are approaching inaccuracy when they say an increase in the angle has taken place in a great number of vessels, but for that probably there is some foundation?—I am not aware of such a charge having been made. The angle has undoubtedly been increased in a considerable number of cases, but, as I said before, you will find when you get all the data before you that it has been decreased rather than increased, taking the whole of the cases we have collected.

530. The matter bears upon the experience of masters and pilots, you know?—Quite so, but pilots are not in a position to know precisely the changes that have been made in the screening.

531. (*Mr. Ismay.*) I do not quite follow Mr. Samson. He says, in one instance there has been an increase, and in another a decrease. I should like it to be made quite clear, whether there has been an increase in the angle in the majority of ships, or not?—In the majority of ships there has been a material decrease.

532. The figures quoted show that that is not so?—The figures quoted are taken from a single list. The reports on the whole show there has been a decrease.

533. But I take it, these are Board of Trade tables?—Yes, but there are others. The next witness will hand you another table which will modify that one.

534. (*Mr. Bolam.*) Some of the angles are very curious. One vessel is screened with one light at 11° across the bow; that is the port light; and the starboard light 12°?—I think there must have been some error in that particular case.

535. There is another 10°, and a great number are 8°. These are exceptionally large?—Quite so.

536. Then there are some strange eccentricities in the screening. One vessel, for example, has her port light screened at an angle of 4° outside, and the starboard light 6° inside—the vessel called the "Ennerder"?—In those cases I think the stanchions must have been bent.

537. (*Sir Edward Harland.*) Or perhaps they have shipped another lamp?—Yes; it is quite possible that may have been done.

538. (*Mr. Bolam.*) Or the screens warped?—No, I think the screens would not be warped to that extent. But it is quite possible, as Sir Edward Harland suggests, they may have shipped an odd lamp.

539. But this probably was not a Board of Trade screening?—Possibly not.

540. In answer to Mr. Ismay (Questions 500 and 501), you said the only objection you had to a two-degree outside screening was, that you thought the angle did not comply with Mr. Gray's rule of green-to-green and red-to-red?—If my answers to those questions will bear that interpretation I wish to say they do not express my meaning and should be modified. In connection with my answer to question 501 I should like to draw the Committee's attention to the experiments last made at Shoeburyness.* You will see there, if you refer to the various tables, that when the lights were screened to 2°, the full light was not seen ahead. The lights were not good.

541. 2° from the outside?—Yes.

542. (*Mr. Bolam.*) What is the size of wick?—In the Admiralty lamps the wicks were an inch and $\frac{5}{8}$ths, standing at a slight angle making them equal to wicks one inch and a half wide, standing vertical to the screen. The other lamps had one-inch wicks, and I think you will see that when both sets of lamps were screened to 2°, the light was not as good right ahead at the 4,000 yards range as when the same lamps were screened to 4°.

543. Then what is the modification you would make?—I want the answer to question 501 to read, "No, there is the objection that if they put in "broad wicks they would not get the light uniform," and so on. The answer stands as it is after that with the exception of some slight modifications that I have introduced to make it clear.

544. (*Mr. Ismay.*) As bearing upon this, do you think that the green-to-green and red-to-red rule would hold good under all circumstances. You do not think a man would get into trouble if he was to follow on those lines?—No, barring mishaps. I think the field in which both lights are seen, requires to be of a certain breadth in order to keep the commanders of ships out of trouble, especially in dirty weather when vessels might get within a mile or less of each other before they see each other's side-lights, and I think the breadth obtained with the 4° screening gives a fair degree of safety.

545. (*Mr. Bolam.*) Do you think your 4° screening affords greater safety than 2° when the green light of another vessel is seen very little on your starboard bow?—Yes, and to make the green-to-green and red-to-red rule satisfactory, the lights should not be screened to an angle less than 4°.

546. But is 4° sufficient for that purpose?—Well, I think it would be better more if there were nothing else to consider but the green-to-green and red-to-red rule.

547. You were speaking, on another occasion, of the great desire there was of having Mr. Gray's rhyme "Green-to-green, or red-to-red, perfect safety, go ahead" absolutely reliable always?—Quite so.

548. On page 5† of a letter you wrote to Sir Digby Murray of January 17th, 1895, you gave some very interesting tables, and amongst others you gave vessels meeting, and distant 1,000 yards from each other, and bearing from the intersection of the extreme outer rays of their side-lights 4°; and you gave the distance their sides would pass clear; a ship of 30 ft. beam would pass another ship at 165 ft.; and a ship of 60 ft. beam would pass another ship of the

* *See* Appendix 2, Nos. 2, 7, 8, 9.

* *See* Appendix 2, No. 11.

† *See* Appendix 2, No. 14.

*Mr. P. Samson.*

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same beam at 120 ft. And a ship of 70 ft. beam would pass another ship of the same beam 105 ft. That is about a beam and three quarters of space. That would not be in "perfect safety"?—No, I think not in the case of the large ships; but at the starting point (1,000 yards), each ship would be overlapping the other ship's field of mingled rays to the extent of half her breadth, and that, taken in conjunction with a slight yawing motion, would either cause them both to port or keep them further apart.

549. You see a large ship would require very much more margin than that, simply because you cannot depend upon steering her straight. I mean to say that it seems to me that your table, if it shows anything at all, shows that from that point of view, green-to-green and red-to-red, 4° is a miserably insufficient angle, and that the lights should be screened to a much larger angle?—In dirty weather a larger angle would be better, but if you increase the angle, then you get a very great breadth of field in which both lights are seen at a distance of two miles.

550. But it would be a grave misfortune if the service got it into their heads that your 4° angle and "green-to-green, red-to-red, perfect safety, go ahead," is right, and is always dependable?—I think it would be most desirable that the rule should be dependable, and it was with a view of making it so amongst other reasons that the 4° screening was adopted. The experiments made at Glengall convinced Sir Digby Murray and myself that it would not be dependable with a finer angle of screening than 4°.

551. But do you not think it would be a grave misfortune if the service got it into their heads that your 4° angle and "green-to-green, to red-to-red, perfect safety go ahead" was always dependable? You know the service do not believe that now. They know that when a green light is only a very little on the starboard bow it is one of those cases in the rule of the road which must be got over by the skill and sagacity of the officer navigating the ship?—I was not aware that the "green-to-green" and "red-to-red" rule was not considered dependable; on the contrary I thought it was considered dependable, and I thought it so myself until I witnessed the experiments at Glengall. No doubt, if two vessels of 70 ft. beam meeting got within, say, half a mile of each other, and were just outside each other's field of mingled rays, it would be a very close shave if each vessel kept its course. There would be only 175 feet between the ships when passing.

552. So that, even though you retain the angle of 4°, a seaman might not take it for granted that green-to-green and red-to-red is absolute safety?—The expression "absolute safety" is, perhaps, too strong. The vessels would pass clear, but it would be a close shave.

553. The misfortune of the rhyme is that the word "perfect" is far too strong?—Yes.

554. (*Captain Thomson.*) After all, it is only a rhyme, it is not the rule of the road?— It was, I believe, adopted by, and received the official approval of, the Admiralty, Board of Trade, Trinity House, and French Government. If the rhyme is not true, Rule 16 of the Rule of the Road would seem to require modification.

555. (*Mr. Bolam.*) I am only surprised that the Board of Trade or Sir Digby Murray has placed great reliance upon it?—It is considered most important, because it fairly expresses the practice of seamen.

556. It is only a very rough-and-ready rhyme, and that is all?—Perhaps so, but it is a fact that 4° screening would give a very fair degree of safety.

557. More safety than 2° no doubt; but whether 4° is very much better safety is a matter about which, I think, one may safely say there is some doubt. The margin in both cases is so exceedingly small as to be approaching an infinitesimal margin of safety?—Quite so. But ships are never going in an absolutely straight line; there is a certain amount of yawing, even with the largest vessels, and that improves the 4° screening at short distances; moreover, the experiments made at Shoeburyness show that when the lights are screened to 4° they show at short distances from the vessel, somewhat farther beyond the middle line than that due to the screening. At a distance of a mile and upwards the 4° screening gives "perfect safety."

558. Then you have placed very much dependence upon these valuable experiments made by Sir Digby Murray and yourself, both at the Glengall Ironworks, and the larger series of experiments performed at Shoeburyness?—Yes. But I think the Shoeburyness experiments are very much better than the others, because everyone has to get experience in making experiments as well as in making the apparatus, and, of course, we had had the previous experience to assist us at Shoeburyness.

559. You made the first experiment?—Yes, in conjunction with Sir Digby Murray. I was responsible for the mechanical arrangements.

560. And the last?—The whole of the mechanical arrangements were devised by me, and I was present at the lamp station in order to satisfy myself that the changing and screening of the lamps were done properly. Sir Digby Murray was one of the observers.

561. I think altogether there are 10 of these experiments counting them each as one; you made two on the 5th of May, four on the 12th and 13th of October, and three or four, I cannot make out which from the Report, on other dates. It is 9 or 10 altogether?—We regard them as three experiments only. Of course a considerable number of actual experiments are included in those three.

562. In the paper placed before the Committee, I think the first series of experiments are those at Glengall Ironworks, and the last those at Shoeburyness?—Copies of both reports have been handed in by Sir Digby Murray.*

563. But some of the experiments have not been put in. For instance, the experiment tried on the 25th June 1891, does not seem to be put in here, though I have a record of it somewhere?—I can hand in a copy of the results if the Committee wish it.

564–5. Yes. That is where I have taken them from. I have a copy of it. But I wanted to ask you a word or two about these experiments, the details of which, no doubt, you are quite familiar with. Does it not occur to you in these experiments, that the only thing positively settled is that you are going to be very uncertain where the outside rays of the green and red lamps are seen at all?—That is so. In the whole of the experiments there was a very great difficulty in finding the exact point where the red and green outside rays terminated. When taking the measurement the observers walked out from the middle line until they thought they had lost the light, and then measured the distance; then they walked away further, say 20 or 30 yards, and turned, walking back until they thought they saw the light again; then they re-measured the distance from the centre line. When they did that they would perhaps find a couple of yards difference, or even more than that, in the measurements.

566. No doubt, but you would expect that the rays screened, say, to 4° would not have shown outside of 4°?—No, I was rather surprised to find them show out so far as they did, but I now understand why.

567. I see that in some experiments which Sir Digby Murray and yourself made, you have screened the lights to 4°, and according to the table of your experiments it shows that at a distance of 815 feet from the lanterns the outside rays of the green light were showing or just disappeared at an angle of 6° 12″, and the red at an angle of 8° 20″, and further out, 1,200 feet from the lamp, it was 5½° and 6¼°?—These experiments were made at Shoeburyness, not at Glengall. The distance from the observers to the lights was 815 feet. The angle corresponding to the distance from the middle line at which the outer rays of the green light disappeared was 6° 12′, while that

* *See* Appendix 2 Nos. 5 and 11.

of the red light was 8° 20′. The lamps used had lenses of large radius, were exceptionally powerful, and burned 2½ times the quantity of oil that is burned in good ordinary lamps. The light seen at the angles named did not come from the flame direct, it was the scattered light, or what is sometimes called the loom of the lens. If the lenses had been of greater radius the angles referred to would have been greater also without any change being made in the screening.

568. I do not know whether that was so in the case of the green light?—In the case of the 3° screening at Glengall, I find from a paper I have before me that the red light showed 24·2 feet beyond the distance it should have done at 300 feet from the lights, while the green light showed 3·2 feet beyond that, due to the screening.

569. I was curious enough to translate these distances into angles in order to show how the 4° angle twisted them, because certainly at the first experiment at Glengall at your longest range, 840 feet, the red showed at its proper angle, 3°, and the green has been cut down to 2° 11′. Therefore it failed to show as far as it should; but in the experiments I have just mentioned that 4° angle became very much larger?—Yes, that was due to the lamps used at Shoeburyness being large and of great power, and to the observation being taken at a short distance from the lights, *i.e.*, within the range at which the scattered light is visible.

570. At any rate, it shows really that the angle at which you see the red and the green cannot be depended upon, however careful you are with your screens?—No, that is not so. The light you see there is what I call scattered light. You may get entirely out of range of the direct light, and still see light from the lens, but that light is negligible, as it can only be seen at short distances from the lamps. The table* I have handed in shows that the distances the direct rays are seen beyond the middle line agree very closely with that due to the screening.

571. Your superintendent at Shoeburyness has a long experience in physical experiments?—You are alluding, I presume, to the Assistant Superintendent of Experiments, who is an Artillery officer; the nature of these experiments is always settled by the Board of Trade.

572. He has much more than you have?—Perhaps so.

573. Therefore if he conducted a systematic set of experiments there the results would be more satisfactory than one or two carried on here and there, would they not? You say you have had no long series of experiments at Shoeburyness. It is apparently at your own and Sir Digby Murray's suggestion that this experiment, which is an extremely valuable one, should be tried?—I think the last series of experiments at Shoeburyness were not only very interesting and valuable, but somewhat exhaustive; and the whole of the mechanical arrangements in connexion therewith were devised and supervised by myself. The credit of suggesting the experiments is, I think, due to Sir Digby Murray.

574. It is just possible, upon these two nights, the lights have had what you might call ordinary fair play?—These nights were selected, of course.

575. I notice that the last series of experiments made there come wonderfully close to the screening?—Yes, remarkably so.

576. But what struck me was that Sir Digby Murray's experiments and yours have resulted in, as it seems to me, this, that you cannot depend upon the green and red lights showing to the theoretical angle, or depend upon the angle however you place them?—The Shoeburyness experiments are about as much Board of Trade experiments as those made at Glengall. The latter show what takes place at very short distances when lamps having thick plano-convex lenses are used, and the results would have been the same if the tests had been made at Shoeburyness or elsewhere with the same apparatus and lamps.

577. But would it not have been better if these experiments had been somewhat more systematic and carried over a longer period. Do you not think that so far the results are sufficiently discordant to make a person, used to physical experiments, somewhat doubt the results?—Sir Digby Murray can give you this information, but I am told it is not practicable for the Board of Trade to ask the Superintendent of Experiments, who is an artillery officer, to make constant experiments. The Shoeburyness experiments were simply an extension of those made at Glengall. I thought the last experiments exceedingly well done, and consistent throughout, and that was the opinion of the Committee who witnessed them. They were made with very much better apparatus than the previous ones, and on that account I attach much greater importance to them.

578. Quite so, so do I, because they are made by a man who knows a great deal better how to carry them out than amateurs would?—The Assistant Superintendent of Experiments was of great assistance, but the mechanical arrangements were on this as in all previous experiments carried out by the Board of Trade officers, not by the staff at Shoeburyness.

579. Then these last experiments were made in the presence of the Rule of the Road Committee?—That is so.

580. On the 8th of December 1893, a report* was presented to the President of the Board of Trade by the Rule of the Road Committee, and they refer to this matter, and they conclude their report by saying:—"At the same time we desire to point out that no "strict uniformity of the angle at which the full "strength of the lights is in practice visible is "possible, so long as a great variety of patterns of "lamps are in use, and in view of this fact, as well "as of the great improvements which have been and "are being made in the construction of lamps, and in "the power of illuminants, and of the great increase "in the size and speed of ships, we think that the "Board of Trade should in certain cases, upon the "request of the shipowner, have power to allow the "angle of screening to be reduced to 3°, or in special "cases to even less than that angle." It is signed, amongst others, by Sir Digby Murray. That appeared to be the written conclusion which the Rule of the Road Committee came to after seeing the experiments?—That is so. Of course, at the time the Rule of the Road Committee signed that report, there was a good deal of talk about using very much stronger lights than those then in use, and that, no doubt, affected their decision, for if you use very strong lights that will show, say, twice the distance of the present lights, and screen them to 2°, you get about the same width of field that you have now with the 4° screening; increasing the power of the light and reducing the angle of screening does not improve matters from the pilot's point of view.

581. Then we come naturally now, from what you have said, to what I will call the disadvantages of the rule of screening from the outside of the wick. Do you agree that there are disadvantages, first of all, because the outside rays may or may not agree with the angle of screening?—It has been proved at Shoeburyness by actual experiments that they practically agree with the screening.

582. But taking all the experiments together, they show that you are never quite certain where the straggling rays will be?—The straggling rays (scattered light) may, I think, be disregarded. I might say, however, that they extend from about 800 to a thousand feet, from good ordinary lights, and if the lights are exceptionally powerful, such as the large Harvie lamps at Shoeburyness, which burn 2½ times the amount of oil that ordinary lamps burn, those rays will extend beyond a thousand feet from the lights. At short distances from the lights the straggling rays cross the middle line produced at a large angle even

* See Appendix 3, No. 3

* See Appendix 1, No. 4.

*Mr. P. Samson.*

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when the flame is completely masked from ahead, *i.e.*, screened to an angle of 0°.

583. Then there is another disadvantage. The better the lights become, or I will put it this way, the more nearly your source of light becomes a luminous point then with your 4° angle from the outside, the more nearly will the whole amount of the uniform or unbroken light be thrown across the fore and aft line, that is to say, the more nearly will the uniform unbroken light show over an arc of 10 points plus 4°. You effectually tie the shipowners' hands under your angle to the 4° from the outside, and you entirely prevent him or your officers from carrying out the recommendations of the Rule of the Road Committee, because evidently you could not allow a shipowner to screen 3° or less than that, unless you issue special instructions which would be quite inconvenient?—Quite so. The shipowner would have to show that he was justified in screening to a smaller angle before it would be allowed.

584. That is so?—Yes. But I do not quite see the point of that question. We never get a luminous point, and from our present experience I should say we are not likely to get one.

585. I saw side-lights, which I believe are the best, or amongst the best, in Scotland the other day; they are circular wicks, burning colza oil, and the diameter is $\frac{7}{8}$ of an inch?—No doubt.

586. There the source of the light is approximating very close to the luminous point?—When the present Instructions were framed we had to take lights as we found them; and it is so still. I think it would be very desirable if we had circular wicks, but before any change could safely be made on that account, it would be necessary to have lamps so fitted thoroughly tested.

587. In regard to altering the length of the screens, where you have your light angled at 4° from the outside you cannot make the screen shorter than 36 inches, of course?—Not according to the Regulations.

588. But there is nothing to prevent their being made longer?—No, nothing of any importance, except their unsightliness in small vessels.

589. If you make them longer than 36 inches—48, for example—that has the effect of throwing the light from the inner edge of the wick, which is the whole force of the light, over an increasing angle?—No, that would rather reduce the angle.

590. From the inside?—Yes.

591. Have you worked that out?—Well, I think it is obvious.

592. The obviousness is the other way, is it not?—No, I think not.

593. Take an inch wick; keep your wick constant at an inch, with a 36-inch screen, the angle of the inner edge would be 2° 25′, and on a 48-inch screen it is 2° 48′?—Yes, that would be so with a constant angle, but I thought you only meant to lengthen the screen, in which case the angle from the inner edge of the wick would be reduced.

594. So that you, to a large extent, tie the hands of a ship which for one reason or another may be compelled to have a longer screen than 36 ins.?—I am not aware that anyone desires screens longer than 36 inches, and I know that many of the smaller ships prefer them shorter.

595. Still, as a matter of mathematics, if you do make the screen longer you get the full force of the light thrown across at a bigger angle the longer you make the screen?—Yes, quite so; the rays from the inner edge of the wick would cross nearer the stem with the longer screen than with the 3 ft. one.

596. You see the Board of Trade Instructions to surveyors compel us to adhere to the constant angle—we have no choice?—Quite so.

597. Supposing you vary your instructions so as to screen from the inside, your statutory duty is to deal with the uniform unbroken light—those are the words in the Act upon which all these instructions, of course, are based. Supposing that you deal with the uniform unbroken light, and issued your instructions screening from the inside of the wick, would you not have these advantages: first, that you could secure with absolute certainty the angle across the fore and aft line at which the full unbroken light could be shown—you could make it 0°, or 1° or 2°?—If you screened from the inside of the wick you would make the screening from the inside of the wick constant, but the screening from the outside would be variable?—The other is by far the better way. I think the screening from the outside of the wick should be constant, and the inside variable, because by that system of screening the lights show to the same or nearly the same distance across the vessel's path in all cases, and that I regard as a point of the very highest importance; moreover, it admits of a standard lamp and screen being used, and that also is a matter of great importance.

598. You want to secure some sort of uniformity at sea?—Yes.

599. Are you securing that uniformity; your scattered diminishing rays are of very little value—you are varying the full body of the light?—When the lights are screened to 4°, in accordance with the regulations, the lights are quite satisfactory.

600. Better outside than inside?—Yes. I think you would find the pilots raising objections to a variable angle of screening. It would, in my opinion, be a source of very great danger.

601. At any rate, if you screen from the inside you would be able to have with absolute certainty your uniform unbroken light?—Oh, yes.

602. And the variations of the screens, if they did occur, would only be with the diminished and straggling rays. The variation in the full volume of light, which I have pointed out, when you angled from the outside, would not occur when you angled from the inside. Instead of taking a piece off the base of your triangle at the acute angle, you are taking it off the other end where the right angle is?—I am afraid I do not follow you. If you screen from the inner edge of the wick, then, of course, you could make the rays from the inner edges cross at any given distance from the ship, either two miles or half a mile, or at any other distance. I would point out, however, that the light which is seen at the outside of the field of mingled rays is not what is known as straggling or scattered light, but feeble direct rays which are completely under control.

603. But you could make them cross at an angle?—Yes.

604. You could fix that angle and stick to it?—Yes, but the angle of screening from the outside of the flame would be a variable.

605. Undoubtedly, you cannot secure a constant all through?—And I certainly think that constant screening from the outside is better than constant screening from the inside.

606. You see that with the screening from the outside of the wick, the whole body of the light will vary with the length of wick and the length of screen, whereas with the angle taken from the inside the full body of the light varies with neither, and thus it is constant with them?—Quite so, but it is neither necessary nor desirable to have screens of different lengths, and unless the lamps are made to a standard pattern, and provision made for keeping the wicks, when of the float type, in one position, conditions might and would doubtless arise which would render screening from the inside of the wick positively dangerous.

607. Supposing you angled your light from the inside at 1°, that is to say, suppose the regulations were that the 10 points should include this, that the inner edge of the wick should be screened 1° across the outer edge of the chock; that is angling to the inside 1° across the bow?—Quite so.

608. Roughly speaking, that would enable a vessel to see both lights full about three lengths ahead. You will perhaps have no time to work this out just now. It does do that, and if you angle the lights at

an eighth of a point across, it will enable you to see both lights of a vessel full about two ships' lengths, roughly. I have worked it out for two cases. I have worked it out for the "St. Louis" which was launched the other day, 60 feet beam. I also worked it out for a vessel of 30 feet beam. The results are about identical, roughly speaking, in both cases. It is no use higgling about a few feet in these matters?—Take a ship with 50 feet between the lights. Then the rays from the inner edges of the wicks would cross at 1,433 feet from the lights, the inner edges of the wicks being screened to 1°.

609–11. (*Chairman.*) With this inch wick, what angle from the inside of the wick is 4° from the outside equivalent to?—It is about $2\frac{3}{8}$°.

612. As much as that?—Yes.

613. (*Mr. Bolam.*) At any rate, there is no doubt that a satisfactory system of screening might be brought about by taking the inside of the wick, and there would not be so many variables in the outcome as when you take the outside?—I do not think so. I think it would be a great mistake to take the inside.

614. At any rate you have a smaller number of variables when you screen from the inside than when you screen from the outside?—No, I do not see that at all.

615. When you screen from the inside the angle at which the whole body of the light crosses the track, is a constant?—Quite so.

616. When your angle is taken from the inside, the angle at which the light from the whole of the width of the wick is a constant. Those are advantages?—I do not think they compensate for making the outside angle variable.

617. What do you think is the special advantage of the outside?—Whenever a ship finds herself in another vessel's field of mingled rays, that is, the field in which both lights are seen, she knows at once that she is within 4° of that vessel's course; and that to my mind is a very great advantage; besides, a variable angle would be a source of danger inasmuch as two ships meeting nearly end on would not be sure of seeing each other's three lights.

618. But you could secure all that, and with fewer variables in the outcome?—I do not quite see how you are going to do it, unless you make the diameter of the wick a constant. But if you allow, as now, the lamp-makers to use flat or circular wick, I do not see how it can be done.

619. It is only the outside of the smaller rays which vary?—It is a gradually decreasing light, no doubt, but it is a light which cannot be disregarded.

620. The great object when you are end on, or nearly end on to a vessel is to have both lights shown with perfect fulness and distinctness right ahead?—Quite so.

621. And at the same time not to have the angle so large but that vessels can get past each other without either turning over with too much helm, and getting more broadside on, which makes a much larger object to strike at in case of danger of collision occurring?—Yes, I agree, but I do not think screening from the inside of the wick is the best way of attaining that object: it is not nearly so good as the present system.

622. (*Mr. Ismay.*) It would involve some expense too, would it not?—Yes, it would cause expense to change the screens; but that would not be a very serious matter.

623. (*Mr. Bolam.*) It was said that in Glasgow there was no return kept of this old angling, so you cannot tell me whether the Clyde ships are screened to a greater angle than before?—No.

624. (*Captain Hallett.*) With regard to the navigating in narrow waters in rivers; owing to the banks, and necessary turns, and things, is it not the case that the absolute rule of the road is put on one side?—Yes. In cases of that kind, the rule of the road is put on one side.

625. The amount of screening has no effect whatever upon the action of the pilots in an intricate river navigation?—I think not.

626. Article 15 of the Regulations provides that where two steamships are meeting end on, or nearly end on, each shall alter her course to starboard, so as to pass each other port side to port side; that does not apply by night to cases where the red light of one ship is opposed to the red light of another, or where the green light of one ship is opposed to the green light of the other. It is upon that Mr. Gray's rule is founded, I suppose?—Quite so.

627–8. Then as the 2° screening. I wanted to get from you what was the distance from one another at which two ships passed where the lights are red-to-red, or green-to-green?—Well, in a given ship with, say, 50 ft. between the lights, the distance at two miles would be 394 ft.

629. Now, at one mile?—They would be 185 ft. But the light at that point would be very, very feeble. It would be very difficult to make sure that you saw the light there, as you would be right on the outside fringe of the field.

630. (*Chairman.*) The table which you have handed in is only worked up to 1,000 yards, is it not?—I have got a few tables here, which I intended to hand in when I was last here, and did not. The three tables* I now hand in show the effect on the width of the field of screening the lights to 1°, 2°, and 3° respectively. I handed in one for the 4° screening last time I was here.

631. You were kind enough to show us this last time?—Yes, I handed you the one showing the 4° screening.

632. (*Mr. Scrutton.*) At page 46 of the Regulations of 1891 it says, "The inboard screen should be so "fitted as to prevent the red and green rays crossing "too close to the ship"?—Yes.

633. And on page 48 of the 1891 Regulations it says if they do not cross at least to a slight extent then they cannot both be seen ahead?—Quite so. Is that a copy of the 1891 Instructions?

634. The 1891 Instructions. The 1894 Instructions, I believe, are precisely the same. Now the 1894 Instructions say, "The side lights are always to be "screened to an angle of 4°"?—Yes. But the 1894 Instructions are not precisely similar to those issued in 1891.

635. You admit, I suppose, that that is a very important alteration?—Well, it was an alteration for the better.

636. But do you admit it was an important alteration, because they do not mean the same thing?—Yes, I think it was an important alteration.

637. Can you kindly tell me how it was that alteration came about?—It was with the view of ensuring the lights showing at a constant angle.

638. May I ask who started it?—Well, that I cannot say. I know that they fixed a maximum angle at the Washington Conference, that is to say, they passed a resolution to the effect that the lights should cross at an angle not exceeding half a point.

639. Do you know who drew up these Instructions?—Well, Sir Digby Murray partly. I do not know whether he did them wholly or not.

640–1. Perhaps, subject to your decision, Mr. Chairman, we might know the history of the difference between the 1891 Regulations simply upon that special point, as far as I am concerned, and the 1894?—(*Chairman.*) We will ask about it.

642. (*Mr. Scrutton.*) Then in the 1894 Instructions you give a diagram (plan 3) in which you say that with a vessel with 20 feet between the lights the intersection of the rays takes place at 143 feet from the light?—Quite so.

643. Screened to 4°?—Yes.

644. If the screening was at 3° that intersection would take place at 191 feet?—That is so.

645. Do you attach any importance to the difference of 48 feet?—None whatever, except that it indicates a decrease in the angle of screening.

* *See* Appendix 3, No. 1.

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646. If the screening was at 2° the intersection would take place at 286 feet?—That is so.

647. Do you attach any importance to the difference of 140 feet between the 4° and the 2° ?—No, I do not attach importance to that increase in the distance at which the light crosses from the head of the ship.

648. And just to complete that, if it were 1°, the intersection would take place at 573 feet?—That is so.

649. What then is the reason that you prefer 4° to 1°, of course it is some other reason than the question of the point of the intersection?—It is to get a uniform light from right ahead; and to enable the green-to-green and red-to-red rule to be complied with with a fair degree of safety.

650. Supposing the vessel is 60 feet beam—we have taken 60 feet as an example—and the light pointed right ahead, and there was no angling of the lights at all?—Yes.

651. A vessel of 30 feet beam approaching would not see the light at all, would it?—No, provided the other vessels had no lateral motion.

652–3. He would see the masthead light?—Yes.

654. What would be the duty of an officer seeing the masthead light, and not seeing the side-lights?—He would keep an eye upon the light for some considerable time to see if it was changing its bearing.

655. Would he not try by altering the position of his own ship to see one of the other lights?—Well, that I do not know.

656. Do you not think he would?—I do not know. I have not experience of that kind. I certainly think he would keep his eye on the light with the view of ascertaining how the ship was steering.

657. My point is simply this—I want to see to satisfy my own mind, because I have no practical experience of seamanship—why it is that you are so very rigid about the 4° being the right angle when you admit that it is not a question of the intersection. The fact seems to me to be as follows:—In the instance I gave you of a vessel 20 feet beam, at 143 feet you enter the dark lane in advancing towards the approaching vessel, but that at 150 or 160 feet you would see both lights?—What I understood you to mean was this: is it objectionable to have the dark triangle between the lights and the crossing point onger in the one case than in the other, that is, longer in the case of 2° or 3° screening, than it is with 4° screening. So far as the dark triangular field is concerned I do not think it matters one bit, but, of course, the distance from the lights to the crossing point governs the width of the field, and it becomes important in that respect.

658. Your paper here says that if the vessel is 60 feet beam then the rays intersect at 429 feet?—Yes.

659. Then if it is screened to 3° they intersect at 572?—Yes.

660. And with regard to the point of intersection you attach no importance whether it is 4° or 3°?—So far as the distance from the lights to the point of intersection is concerned, no; I think when two vessels meeting end on get within 572 feet of each other it does not matter whether they have lights or not.

661. (*Captain Thomson.*) I was going to ask you whether the schedule to the Order in Council* plan still gives the opinion of the Board of Trade?—Yes, it does. The second part is explanatory of the Regulations in the first part.

662. The second part of it. I think it is merely an order to the surveyors?—Yes; but it also explains the first part.

663. Then I see there is an alteration made here. The International Regulations for Preventing Collisions at Sea say that the side-lights "shall be "so constructed as to show an uniform and unbroken "light over an arc of the horizon of 10 points of the "compass, and so fixed as to throw the light from "right ahead to two points abaft the beam." The new Order in Council says the lights shall show over 10 points plus 4°. That is a change?—Yes. That schedule was, I believe, prepared with a view of defining the meaning of the phrase "right ahead," and also of satisfying those who thought the Regulations did not admit of the lights crossing that 4° screening was not in any way an infringement of the Regulations. I have not had anything to do with the drawing up of that schedule.

664. Can you tell the Committee who had the drawing up of that schedule?—I do not know.

665–6. I want to know whether this is a change, or simply explanatory?—Sir Digby Murray will be able to give you that information when he comes before you.

667. It says here, "The lights shall be screened "so as not to show across the bow of the ship "itself." Then further on I see, "The light shall "not be considered to be so screened unless they "are screened to 4°." But surely it is not necessary to screen it to 4° to prevent it showing across the bows of the ship?—Yes, certainly. If the lights were screened to a larger angle than 4°—as many lights were before the present Instructions were issued—and placed well aft, the most convergent direct rays might cross abaft the stem. Even now with 4° screening, and the lights placed amidships, some of the rays fall inside the ship; and in cases where light-towers are used a very considerable number of the rays fall inside the ship. Again, in Her Majesty's ships, in which the lights are placed on a raised platform amidships, very much narrower than the ship itself, or on the sides of the funnels, a very large number of the rays pass over the ship's deck.

668. Then you think it is necessary in order to prevent showing across the bows of the ship itself, that the light should be screened to 4°?—Well, I do not think it was for that purpose alone that the lights were screened to 4°. The schedule requires the lights to be uniform from right ahead of the ship to two points abaft the beam on either side, and the 4° screening admits of that being effected, while it also prevents the lights from crossing abaft the stem.

669–70. You said, I think, in your evidence, that you were in favour of the wick being central to the curvature of the lens?—Yes.

671. Have you noticed that that never is the case in any of the lamps?—No. It was so in most of the old-fashioned lamps, but it is not so now, nor since the new instructions came out.

672. In what lamps is that so?—In the lamps made in London and elsewhere.

673. Of later date than 1893?—Yes, since the instructions came out. I know that Ridsdale's have altered their lamps to suit the new requirements, and I know that other makers have also.

674. Do you notice, in this very good diagram in the German paper,* that the wick is not absolutely central to the curvature of the lens?—I know it is not so, but I think it is better that it should be so; where you are dealing with a large staff it is better to reduce the rules to as simple a form as possible.

675. It seems to me, in all the lamps made, not only is the wick not central to the curvature of the lens, but the lens has no fixed centre; it is a curve of a varying character. It is in all the lamps I have seen, and it is in all these diagrams, and it is in nearly all the diagrams put in by the Board of Trade?—I think you will find that both the lens and shade are parts of cylinders.

676–81. Then you think they were not purposely made with varying curves?—No, they were parts of cylinders. The old-fashioned fish globe lenses are blown spherical, and then split into three parts.

682. When you speak of a lamp not being good when viewed from right ahead, you would not expect a lamp viewed from right ahead to be so good as when seen at an angle of 45°?—Yes.

683. You would?—Yes.

* Appendix 2, No. 12.

* *See* Appendix 2, No. 10.

684. Independently of position of wick, or anything?—If the lamps are made in accordance with the present Instructions they will show just as well ahead as in other directions. In the old-fashioned lamps they did not, they showed much better at five points, but in lamps made in accordance with the present instructions they show just as well ahead as at five points.

685. There is now a question of rather wider interest I wanted to ask you, independently of the argument about fine or broad screening. Do you not think that under the present Rule of the Road it is necessary to have a certain angle of crossing?—Yes, and I certainly think the angle of crossing should be fixed. I do not think it matters very much what the angle is, provided it is sufficient to cover the green-to-green and red-to-red rule, and the rule as to uniformity. If you increased the screening to 5°, there would, in my opinion, be no objection to it whatever.

686. Even if it was proved that finer screening was better than 4° or a large angle of screening, yet it is necessary to have a certain angle of screening to satisfy the rule of the road?—Yes, and if the angle of screening corresponded with the legal definition of the term "right ahead," then I think it would be desirable to have a fairly large angle.

687. The Rule of the Road distinctly says that when two ships see each other's side-lights ahead, or nearly ahead, they are to port, at night time. Of course, if they had a fine angle of screening they would have to be very nearly end on indeed in order to satisfy those conditions?—Yes.

688. Therefore, if two ships had a different angle of screening, one ship might come under those regulations, the other might not?—Quite so.

689. Therefore, you think the angle of crossing or screening should bear the same proportion, or be the same as the angle which is the limit of to right ahead or nearly right ahead?—Quite so, and I think the angle should be sufficient to keep ships nearly ahead of each other, or at a very fine angle on either bow from coming into collision.

690. In Mr. Gray's rhyme, what do you suppose he meant by "green-to-green" and "red-to-red"?—What I think he meant was, that if two ships were meeting on parallel courses, and, say, 5° or 6° on the starboard bow of each other, each vessel would see the green light of the other vessel and keep her course.

691. But do you not think it right, as in the rules, that if the ships have green-to-green there is perfect safety, and excepting accidents of steering they will pass clear of one another?—It would be so with 4° screening.

692. But do not you think that would be the same with any angle of screening?—No, I think not. Sir Digby Murray will show you some diagrams which he has had prepared to illustrate that point, and from which it will be seen that a smaller angle would not be so satisfactory.

693. But I think that Mr. Gray meant when he said "green-to-green" that the green light of one ship should be actually on the starboard side of the green light of another ship, he did not mean that one green light should be ahead of the other ship's green light, and he did not mean that one green light should be on the port side of the other ship?—That is not what I understand it to mean. I take it to mean that when green opposes green anywhere there is perfect safety.

694–5. But so long as the green light makes any angle at all with this one, I do not care how fine it is, they must pass clear, is not that so?—No. I do not think so. In that case the ships would come into collision—their spars would foul. (*Describing.*)

696. Excuse me, they would not come into collision, because if they came into collision there would be no angle in that case between their green lights?—If you draw this vessel's path you will find that it is so.

697. I am not speaking of the paths of the ships at all, I am simply speaking of green-to-green?—But the observer may be anywhere in the ship, and if he were there he would see the mast-head and green light of the other ship at a small angle.

698. But I do not think it matters where the observer is, it is a question of the green light to green light?—But I think the officer of the watch on this ship seeing a green light there would be justified in thinking that he was perfectly safe.

699. As regards the lamp you say I think the dirt on the sides of the lens is a source of danger?—It is.

700. Do you not think it would be possible to make a lamp having a larger lens, or a lens of a larger arc than the necessary 10 points? You could have slides put inside the lens which could be put into position after the lens is cleaned, and so arranged that the lamp should not be fixed in its place unless those slides were in their proper places?—Yes, I think that could be done.

701. That is a rough diagram. That is the principle I mean (*produced*). The slides are put inside the lenses?—But the slides add complication to the lamp.

702. But still it would be possible to construct it?—Yes, but I think a simpler plan than that would be either to fit an outside screen, or make the housing flush with the outer surface of the lens as shown in the plans of the additional mast-head light proposed by Sir Digby Murray which I have handed in.

*Mr. P. Samson.*
24 April 1895.

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## Thursday, 25th April 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Mr. BOLAM.
Captain CASTLE.
SIR FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

### Mr. JAMES RAMSAY called and examined.

703. What is your name?—James Ramsay.

704. What is your business?—Board of Trade engineer surveyor, and Principal Officer for the North-Eastern District of England.

705. Have you had sea experience?—Yes, about 16 years in the merchant service.

706. Is it one of the duties of a Board of Trade surveyor to inspect the side-lights of steam and sailing ships?—Yes.

707. How long have you been a Board of Trade surveyor?—About 22 years, during which time I have performed duties on the Thames, the Clyde,

*Mr. J. Ramsay.*
25 April 1895.

*Mr. J. Ramsay.*

25 April 1895.

the Mersey, the Tyne, the Wear, the Tees, and at Hartlepool.

708. What was the practice as to the screening of side-lights prior to the issue by the Board of the Instructions to Surveyors 1892? — The screens were placed parallel with the keel at the inner side of the lanthorns, and the chocks, or their equivalent, were of such dimensions that a line drawn parallel to the keel from the inner edge of the lens cut the outer edge of the chock.

709. I presume this was the practice for a great number of years?—Yes, to my knowledge since 1873.

710. Did this arrangement of the screens allow any of the direct rays from the light to cross ahead of the ship?—Yes.

711. What was the angle of convergence of the most extreme rays?—It varied with the different lanthorns; the average was about $4\frac{1}{2}°$.

712. Was there much variation found to exist with different lamps?—Yes, the surveyors in the north-eastern district found the angle to vary from about $\frac{1}{2}°$ to 6°, and in a few cases it was as much as 8° to 9°. I put in a list of lanthorns* of the types made prior to 1892 by various Tyneside firms. These lanthorns, measured by myself, represent a great number which have been placed in the market by the firms in question. The angles vary from 4° to $5\frac{1}{6}°$, and the mean is $4\frac{1}{2}°$.

713. (*Mr. Bolam.*) Are these angles measured from the outside edge of the wick to the chock?—When these lamps are screened so that the inner edge of the lens is in a line with the chock, the angle from the outer edge of the wick is of the dimensions I have stated.

714. I thought you were giving us the angle made by the outer ray across the chock?—Yes, the chocks are supposed to be in a line with the inner edge of the lens.

715. Are the lines drawn from the outside of the wick to the outer edge of the chock?—The average angle is $4\frac{1}{2}°$; they vary from $4\frac{1}{2}°$ to $5\frac{1}{6}°$. You must always bear in mind the distance from the chock to the light is 36 inches, and the chock itself is parallel with the inner edge of the lens.

716. The only question is, whether you take the measurement from the inside of the wick or the outside of the wick?—The outside of the wick; we always deal with the outside of the wick.

717. (*Chairman.*) I see the mean here is $4\frac{1}{2}°$?—Yes, and the wicks were all an inch wide, and were inclined 45° to the middle line. If these wicks had been at 90° the angles would have been larger, but I simply take the wicks as I find them in the lamps.

718. Why is there so much difference in the observed angles?—The construction of the lanthorn in many cases required the wicks to be located between the lens and its centre of curvature in order that the light might be seen two points abaft the beam; and in other cases the wicks were no doubt so placed in order that the light ahead might not be obstructed by the margin of black dirt not infrequently seen around the lens. So far as I know, it has never been the common practice, until the issue of the last revision of the instructions, to require the wick to be placed at the centre of curvature of the lens, nor is this required by the Regulations for Preventing Collisions at Sea.

719. What is the usual construction of side-lights?—I put in a diagram showing an outline plan of the ordinary type of side-light as made in the North-Eastern District prior to 1892. The inside radius of the lens is 5 inches, chord of arc 9 inches, and arc about $128\frac{1}{2}°$. The lens is inclined 45° to the fore and aft middle line of the vessel, and it will be seen on inspection of the diagram that in order to throw the light two points abaft the beam the wick requires to be about one inch nearer to the vertex of the lens than to its centre of curvature. It will also be seen that the outer edge of the $1\frac{1}{4}$-inch wick is transversely 3 inches distant from the inner edge of the lens, also that the outer edge of the 1-inch wick is distant about $2\frac{3}{4}$ inches. These transverse distances are tangents. This type of lanthorn represents about two-thirds of those examined by myself during the time I have been in the Board's service, and it probably also represents about two-thirds of the whole number of lamps supplied in the past to merchant ships and steamers.

720. What is that?—*This* is simply a diagram showing the position of the lens and position of the wicks. Here is another one that goes with it showing the wicks in another direction.

721–3. (*Sir E. Harland.*) An expression was used by the witness "the inner edge of the lens"?—Yes.

724. That the measurement was to be taken from the inner edge of the lens?—The *angle* is now measured from the outer edge of the wick.

725–8. My point is, the witness referred to this inner edge of the lens as if it was an important point, whereas it appears that it is not of the smallest consequence?—Under the old regulations we had to put the screen at the edge of the lens. It did not matter where the wick was. We put the screen at the inner edge of the lens, and consequently the angle varied for every type of lamp. Remember about two-thirds of the whole number of the lamps made in this country were like those I have described. What I wish you clearly to understand is this: that two-thirds of the lamps made in this country were made like that; and consequently the framers of our regulations for preventing collisions at sea made the angle much bigger than it is now.

729–34. (*Mr. Ismay.*) Because of the size of the lamp?—Yes, two-thirds of the lamps, as I say, in this country were made like that.

735. (*Mr. Scrutton.*) What were the regulations?—I have a copy of the earliest regulations which were ever issued by the Board of Trade, and it distinctly says in these regulations that the making of the lamp is to be left to the discretion of the lamp-maker.

736. You do not measure from the lens under the new regulations?—No, not under the new regulations. The screen must be $2\frac{1}{2}$ inches inside the outer edge of the wick.

737–41. (*Rear-Admiral Andoe.*) By the old regulations it was said you were to consider the edge of the wick, and not the edge of the lens. That would make a difference in the screening of the lamp?—Yes, an enormous difference.

742. Why was that?—I believe there was a mistake in the printing of one paragraph; but anyone having any conception of the screening would never have thought it could have been other than an error.

743–6. (*Chairman.*) Are the lanthorns all made the same size?—No, the radius of curvature of the lens, and the number of degrees in the arc vary. I put in a table* giving the dimensions of the lenses of side-lights of three different sizes. The outside radius of curvature of the lens is respectively 5 inches, $5\frac{5}{8}$ inches, and $6\frac{5}{8}$ inches, and the aperture of the lens in each case is 130°. The table shows the transverse distances of the outer edges of the 1-inch and $1\frac{3}{4}$-inch wick respectively, from the forward edges of the lenses, assuming that they are all inclined to an angle of 45°, and that the wick in each case is at the centre of the curvature. The mean distance for the 5-inch lens is $2_{\frac{3}{10}}$ inches; for the $5\frac{5}{8}$-inch lens $2\frac{1}{2}$ inches, and for the $6\frac{5}{8}$-inch lens $2\frac{7}{8}$ inches. The mean of the three is $2\frac{1}{2}$ inches. As these lenses contain only 130°, none of them, when inclined to 45° to the fore-and-aft line, has sufficient range to allow the light to be seen two points abaft the beam, and on that account it would be necessary to place the wick about one inch out of the centre towards the vertex of the lens. This would, of course, make the mean transverse distance for the 5-inch lens about $2\frac{5}{8}$-inches, for the $5\frac{5}{8}$-inch lens $2\frac{7}{8}$ inches, and for the $6\frac{5}{8}$-inch $3\frac{1}{4}$ inches. That is to say, if you take three lenses and divide by three, you get exactly what the

* *See* Appendix 4, No. 2.

* *See* Appendix 4, No. 3.

regulations now require. These transverse distances are the tangents of the angles, and as the length of the screen is 36 inches, the angles are respectively 4° 10′, 4° 34′, and 5° 9′. In this table the lenses are supposed to be lying at 45°, and the wick at 45° and 90°, and so on; and you will notice the mean transverse distance is 2½ inches—which is the distance now required by the regulations.

747. Are all the lenses placed in the lanthorn at an inclination of 45° to the fore-and-aft line?—No, probably in about one third of the lanthorns now in use in the merchant service, the angle of inclination varies from 42° to 35°, depending on the number of degrees in the arc. I put in two outline plans, in one of which the inclination of the lens is about 36° and in the other it is 40½°. This is now the centre of the curvature, that is, the centre of this circle, and you see the whole of the flame two points abaft the beam; that is, the 4° angle away out there forward, and you see the line from *there* to the edge of that wick there; that is all the margin of lens there is to spare; a little bit of dirt on that lens there, would intercept the rays, and it would not get out. In order to get over that difficulty, some of the makers moved the wick a little bit further, so as to get it clear.

748. (*Rear-Admiral Andoe.*) They would have to make the lens longer?—But you cannot, if the lamp is made.

749. Is there any objection to having the lens longer?—No.

750. (*Chairman.*) What we are told is, the lenses are made so, and in order to meet the difficulty they do this?—Yes, I want you to notice that this lens is inclined to 45°, and that to 35°, and you will also notice that bit of brass in the one lamp is twice the width of the brass in the other lamp.

751. (*Rear-Admiral Andoe.*) What is the objection to it?—There is no objection at all.

752. (*Sir E. Harland.*) That is new?—The angle at the inner edge of the lens would be much less in the case of the second lamp than in the first.

753. You do not show the position of the reflector?—No, so long as the radius of the reflector is the same as the distance from the light, you can make it any size you please.

754. (*Rear-Admiral Andoe.*) You say there is no objection to that; yet, if there is any dirt there, it would be a serious matter?—There is no objection so long as the lantern is kept in order.

755–7. What is the proper position for the wick in the lanthorn?—The centre of curvature of the lens.

758. (*Chairman.*) Do you think that the new or 1892 instructions issued by the Board for the guidance of the surveyors are such as to insure uniformity of practice?—Yes, and if makers and surveyors adhere strictly to them, the side lights will be made of a superior type to the majority of those constructed prior to 1892.

759. Do you think it possible to screen a side light to show a uniform and unbroken light from right ahead to two points abaft the beam, and at the same time to confine the light to 10 points of the compass?—No, that is impossible, because when the light is uniform throughout the prescribed range a considerable portion of the rays must cross ahead of the ship; the angle depends to a great extent on the width of the flame.

760. What do you think is the smallest angle which would suffice to enable the light to be seen as required by the regulations?—The angle should never be less than that which would enable the full volume of the light to be seen at a reasonable distance ahead of the ship, when upright and also when heeled to 15° or 20°, either to starboard or to port.

761. What do you consider a reasonable distance?—The shortest distance possible, having regard to the regulations for the prevention of collisions at sea, which require that none of the rays shall cross abaft the stem of the ship.

762. What is the angle of convergence that would suffice under all circumstances?—Not less than 4° when the vessel is upright.

763. Would the angle not be the same when the vessel is heeled?—Not in all cases, because when the ship, the lanthorn, and the screen are all heeled to, say, 20°, the flame tends to remain practically vertical, with the result that what was 4° in the upright position may become 2¾° to 3° for the light on the side to which the ship is heeled.

764. Can you give an example?—Yes, I have a model screen here with the inner edge of the flame in a line with the edge or face of the screen. When the screen is upright the whole of the flame can be seen ahead, but on the other hand, when it is heeled outward a large portion of the flame disappears behind the screen. I brought the model here to show you that the opinion held by some sailors as to what is the correct way to screen a side light is fallacious. They hold that the wick should be screened at its inner edge. The model proves conclusively that this view of the matter is wrong. These sailors also appear to think that the width of the flame is exactly the same as the width of the wick in all cases. I have measured the flames of 1 inch wide paraffin burners and I find that the average width is 1¾ inches in the best type of lanthorn, so that on this ground alone it is manifest that the screen should be some distance inside the wick to allow the whole volume of the flame to be seen ahead of the ship. Some sailors think that the wick should be screened at the inner edge. Now if you look right down you can see the whole of the flame the whole distance, but if you turn the screen over like that you cannot see it at all, the part of the flame that gives light, disappears behind the screen.

765. (*Sir E. Harland.*) But if you reverse it, what then?—Then you get more.

766. (*Captain Thomson.*) What makes the flame go up straight?—The heat above has the tendency to make it go up straight.

767. (*Mr. Ismay.*) I suppose you think sailors ought to have their own way?—Sailors always have their own way in everything.

768. (*Chairman.*) What allowance would you make to provide for the heel of the ship to 15° or 20°?—It should not be less than the height of the flame multiplied by the sine of the angle of heel, but the exact value could only be accurately determined by experiment.

769. But the Board of Trade have fixed the angle of convergence for the most extreme rays at 4°?—Yes, they appear to have been desirous of keeping the angle as fine as possible consistent with the due observance of the regulations for preventing collisions at sea, and on that account they decided, after Sir Digby Murray made a series of carefully conducted experiments, that the angle of convergence should not be less than 4° when the vessel is upright, which, in my opinion, gives 2¾° to 3 degrees, when the lanthorn is depressed 15° or 20°.

770. Do you think this is a satisfactory arrangement?—Yes, at any less angle than 4° the light would not be uniform throughout the range.

771. Why do you think so?—All the results of experiments which I have seen indicate conclusively that the minimum angle of convergence in the upright position must not be less than 3°, in order to show a nearly uniform and unbroken light throughout the range; it is therefore evident that if the light is also to be uniform when the vessel is heeled, the angle in the upright position should not be less than about 4°. The flame of a 1¼ inch colza burner is about 1⅜ to 1⅞ inches wide. If it be screened at its inner edge, and parallel with the keel, the angle of convergence is about 3° when the vessel is upright. In this case the full volume of the light is thrown barely ahead of the lanthorn, while to comply strictly with the regulations it should be thrown ahead of the ship; it would therefore seem, apart from experiments, that the 4° angle is as fine as it is possible to attain in order that the full volume of the light may be seen ahead at all inclinations of the ship which are likely to occur in practice.

*Mr. J. Ramsay*
25 April 1895.

772. (*Sir F. Evans.*) Might I ask what is the height of the flame?—I have measured several, and they seem to range about $1\frac{3}{4}$ to 2 inches, whether they are paraffin or colza.

773. Vertically?—Yes.

774. (*Captain Castle.*) That is the flame?—Yes, so that if the lantern were heeled 20°, and you take the height of the flame as the correct way to deal with it, then the height of the flame multiplied by the sine of 20°, gives half an inch, so that you get $1\frac{7}{8}$ inches plus half an inch as the distance from the outer edge of the wick to the screen, or nearly $2\frac{1}{2}$ inches.

775. (*Chairman.*) Of course all heeling is only as the vessel rolls?—If it were only the rolling of the vessel I do not think it would matter. Suppose a steamer leaves New Orleans carrying a homogeneous cargo: she is probably rather a narrow ship for her depth, and when she starts she is probably stable enough; but the firemen are daily working the coal out of the bunkers below the water-line; this tends to raise the centre of gravity of the ship and her lading until it approaches the same height as the metacentre, and she takes a heavy list. You can understand a ship leaving New Orleans under the conditions assumed goes steady enough at first, but taking the coals out of the lower bunkers every day, by and by she gets a good big list, and the light on the lee side of the ship ought to be screened so that it can be seen ahead of the ship in that condition, or it is no good.

776. (*Mr. Ismay.*) Are the worst cases found amongst vessels going from the Baltic with deals?—There are some of those very bad.

777. (*Captain Castle.*) And the vessels from the Mediterranean?—Yes.

778. (*Mr. Ismay.*) And the small steamers going to the Mersey?—Yes, and very often one sees ships coming into the docks with a considerable list.

779. (*Captain Castle.*) But a ship leaving port perfectly right, and getting the wind during the course of the voyage, would take a natural list?—Yes, if the cargo is such that it moves.

780. Do you think that at the time the Regulations for preventing Collisions at Sea were first issued, it was intended that the side-lights should both be seen ahead of the ship?—Yes, the Regulations published in June 1848 by the Commissioners for executing the office of Lord High Admiral of Great Britain and Ireland, &c., distinctly state that the side-lights are to be fitted with inboard screens at least 3 feet long, to prevent them from being seen across the bow. The screens to be placed in a fore and aft line with the inner edge of the side-lights, as is to be seen in the "Nautical Magazine" for August 1848.

781. What angle of convergence would this give?—With ordinary side-lights, $9'' \times 9'' \times 11''$, screened in this way, the angle of convergence would not be less than 5° to 6°, and in some cases it would be more, probably 8° or 9°.

782. (*Mr. Bolam.*) Of course it might be much less?—I do not think it would be much less than 5° or 6°.

783. (*Captain Thomson.*) That is not in the Regulations itself?—I think so.

(*Mr. Bolam.*) Yes, I have it here; the screen to be placed in the fore and aft line "with the inner edge of the side-lights. But those words, "with the inner "edge of the side-lights" dropped out.

(*Chairman.*) They were dropped afterwards certainly.

784. What did you say was the probable angle of convergence under this rule?—5° to 6° probably, in some cases as much as 8° to 9°, certainly not less than 5° to 6° with any lamp that has ever been made.

785. How long did that continue to be the practice?—I cannot say definitely; but there is an article on the rule of the road in the "Nautical Magazine" for November, 1851, in which the wording of the paragraph, relating to screening is precisely the same as that referred to in my previous answer. I have a book of instructions here, issued by the Board of Trade in 1855, and, so far as I know, it is about the earliest book of instructions issued, and it is the only copy I ever saw. In this book, not only have we instructions about the screening; but we have the pictures that the Admiralty issued with the regulations.* Now, these pictures show distinctly that it was not intended that the lights should only cross a long way a-head, and in paragraph 87 there are instructions about fixing the side-lights.

786. "87.—The manner of fixing the coloured light "is to be particularly attended to. They should be "fitted each with a screen of wood on the inboard "side in order to prevent both being seen at the "same moment from any direction but that of right "ahead. 88.—This is important, for without the "screens (a principle first introduced with this plan) "any plan of bow lights would be ineffective as a "means of indicating the direction of steering. "This will be readily understood by a reference to "the preceding illustrations, where it will appear "evident that in any situation in which two vessels "may approach each other in the dark the coloured "lights will instantly indicate to both the relative "course of each; that is each will know whether "the other is approaching directly, or crossing the "bows either to starboard or to port. This in-"timation is all that is required to enable vessels "to pass each other in the darkest night with almost "equal safety as in broad day, and for the want of "which so many lamentable accidents have occurred. "It is left to all persons concerned to furnish "themselves with whatever description of lantern "they may see fit to adopt, provided always that "the above conditions are fully and effectually "carried out." Now here are the lights, and these lights show that it was intended that the light should be shown across?—This is what was intended. Steamer B sees all three lights of A. Unless the rays cross the bow, he could not see all three lights.

787. But these vessels are right ahead of each other?—Then you see both lights. If the rays do not cross the middle line you will not be able to see both lights. If you were to screen lights parallel with the outer edge of the wick you would require to stand out at least 3° from each bow before you would see them.

788. I do not know that much is to be gathered from those illustrations?—These are the illustrations published by the Admiralty in 1851 and are copied by the Board of Trade. Look at that paragraph there, No. 90.

789. "It is left to all persons concerned to furnish "themselves with whatever description of lantern "they may see fit to adopt, provided always that the "above conditions are fully and effectually carried "out"? In 1851 it was left to the lampmakers to make any kind of lamp they liked. After some years directions were added that the lanterns were to be not less than $9'' \times 9'' \times 11''$.

790. Do you refer to this as showing that at that time it was considered that the lights should cross ahead of the bow?—I think these instructions clearly indicate that the lights would be seen a considerable distance across—much more than 4°.

791–2. (*Chairman.*) You may be right, and that may be the inference. But it does not agree well with these words: "They should be fitted each with a screen "of wood on the inboard side to prevent both being "seen at the same moment from any direction but "that of right ahead?"—At any rate what was in the mind of the Board of Trade some years ago was that the side-lights were to cross at some distance ahead. I have a copy of the "Rule of the Road," here by the late Mr. Thomas Gray, and this is what he says.

793. "As I know the rays of the side-lights must "in every ship cross at some distance ahead, I ought "to find out what that distance is in my ship, so that

* *See* Appendix 1, No. 1, and Questions 249–252.

"I may know how far on each of my bows a ship "nearly ahead will see both my side-lights. This "is very important, as I shall appear to be end-on "over the whole arc within which both of my lights "are seen; and I must bear it in mind on seeing "another ship fine on either bow." No doubt you are quite right in saying that this shows that in the mind of the person who wrote it the side-lights were to cross at some distance ahead?—And then he gives a description of the diagram.

794. "In the following diagrams the black lines "represent the rays of the red light, and the dotted "lines the rays of the green light. Within the triangular "black space ahead of the ship neither side-light can "be seen, but both can be seen ahead of it, within "the arc, covered by the crossing rays, and I therefore "know that another ship, when within that arc ahead "of my ship, can see both of my side-lights, and that "I shall appear to be end-on to her"?—Yes.

795. (*Sir F. Evans.*) What is the date of that?—The fourth edition, 1884.

796. What is the name of the book?—"The Rule "of the Road at Sea." There is another very interesting thing in this book. There are the pictures in connexion with the green to green and red to red rule. I think that is very interesting. It says "When "all three lights I see ahead, I port my helm and "show my red," and then there are two ships crossing,—"Green to green or red to red, perfect "safety go ahead." The writer must have contemplated a convergence of 4° or 5° at least.

797–8. (*Chairman.*) There can be no doubt that the Board of Trade in 1884 contemplated the lights would cross?—There can be no doubt about that. I never contemplated anything else. I may say that during the 16 years I was at sea I saw side-lights taken out and put in; and I saw the lens project outside the screen; but it never entered my mind to think or calculate what was the angle of convergence of the rays. Now, what was my experience is that of every sailor who goes to sea now, and sees those lights; he has no more conception as to the angle at which the extreme rays cross ahead of the ship than I had.

799–807. (*Rear-Admiral Andoe.*) Do you think the 4° is a fair compromise?—Yes. I do not say it because I am a Board of Trade surveyor. I think it was a happy selection to make it 4°. It seems to allow for heeling and everything else, and if there is any change at all, I think it ought to be an increase and not a decrease.

808. (*Sir E. Harland.*) It ought to be more than 4° if anything?—More than 4° if anything. That is my conscientious opinion in the matter.

809. (*Rear-Admiral Andoe.*) As to the question of the rays, do you think that seamen were aware the rays did cross?—I think they did not know anything about it. I was going to say I think that two or three men, who were fond of writing, had something to say in the matter, and all the rest thought it was a good thing to go upon. That is my opinion. I do not believe myself now that one sailor in ten ever carefully measured a lanthorn in his life. If I took a lanthorn to him and said, "Now, what is the relation between "these curves and the centre of the flame?" I do not believe he could tell me.

810. He could not tell you what the angle was?—I do not believe he could tell me what was the difference between *this* side *here*, and *that there*. Sailors are like other men. Unless they pay special attention to some particular subject they know nothing about it. I am the same. If I do not read up a subject I do not know anything about it. We are all the same, every one of us.

811. (*Sir F. Evans.*) Take the case of two ships approaching one another, each seeing the other's three lights?—It is the duty of each to put the helm hard-a-port.

812–3. If they are 2,000 feet apart you have only a little over half a minute before they meet; they each see all three lights and port, but they go into one another because they cannot get out of the way?—That is an example of the necessity of the lights crossing at big angles.

814. (*Mr. Bolam.*) The more you screen the lights the worse the case?—I do not think so.

815. You would give them a larger angle?—Yes.

816–8. You are not a sailor?—No. I am an engineer. Here is another diagram. Here is a ship, like the "Teutonic" 60 feet beam, and 560 long. She has colza burners $1\frac{3}{4}$ inches wide, and both lights are screened to 4°. Now at two miles from the lights the width of the field where the *full volume* of the light is seen is 440 feet.

819. (*Rear-Admiral Andoe.*) 440 feet?—Yes, 440 feet. So if we put the "Majestic" at right angles to the "Teutonic," at this distance of two miles, all the people on board the "Majestic" will not see the full volume of both lights of the "Teutonic." A man at the stem would only see the red light, and a man at the stern would only see the green light.

820. You do not say the green and red are the same power. Is it not a positive fact, that one is very much stronger than the other?—Yes.

821–2. (*Chairman.*) Assume them to be of equal strength?—The officers on the bridge of the "Majestic" could see both lights of the "Teutonic," if they were of equal brilliancy; but the man on the forecastle could not see them both, if the lights converged at an angle of 4° That is the way to look at the problem.

823. (*Mr. Bolam.*) This is only the inner rays—not the full volume?—I have dealt with this question of the intensity of the lights in a diagram. The $1\frac{3}{4}$ inch wick is supposed to be divided into a number of equal parts, and the light from each dealt with separately as shown in the curved lines on the diagram I have here. An observer walking along the curved line is supposed to see light of the same intensity as he would see if standing on the middle line at the limit of the two miles range.

824. That is the actual power of the light?—If you take the full volume of light as seen at the two miles range, then as you walk along the curved line, you gradually cut off the light, because you are getting behind the screen.

825. (*Sir E. Harland.*) You are getting nearer?—Yes, so as you go along you gradually cut it off.

826. (*Rear-Admiral Andoe.*) You are cutting it off in volume, but increasing in intensity, as you approach it?—Yes.

827. (*Mr. Bolam.*) If you take the ordinary type of wick that would be very much wider?—Yes.

828. (*Chairman.*) You were kind enough to tell us your experience at sea. Perhaps you would let us know what position you held?—I was most of the time chief engineer. I have been in all types of ships, from ships carrying two engineers to ships carrying seven, and when I left the sea I was chief engineer on one of the largest ships in the North Atlantic passenger trade from Liverpool.

829. (*Mr. Bolam.*) You said that the average screening in the North of England was $4\frac{1}{2}$°?—Yes, $4\frac{1}{2}$°.

830. And that the minimum screening was 1°?—Half a degree, I think I said.

831. And the maximum about 9°?—From $\frac{1}{2}$° to 6°, and in some cases I said it was from 8° to 9°—in a few cases.

832. Then the $4\frac{1}{2}$° is not just a mean of the highest and lowest of the angles?—It is, taking the whole of them together, and adding them up and dividing them by the arithmetical number.

833. The arithmetical number of what?—Of the whole number of ships dealt with. I have a list of ships here and the surveyor's report of them.

834. Did you mean to put this in?—I think that these have been put in before. I am not sure.

835. (*Chairman.*) We have had a copy of them, I think*?—Yes.

836. (*Mr. Bolam.*) Does this contain it?—(*Report handed to the witness.*) No, this does not.

* *See* Appendix 4, No. 1.

*Mr. J. Ramsay.*

25 April 1895.

837. Could you put the manuscript in?—It is only a press copy, but I can put it in.* The originals I sent to the Board of Trade some time ago.

838. (*Captain Hallett.*) Can you tell me whether lenses are quite a circle?—A circle in all the cases I have measured.

839. Practically, a true circle?—Yes, when they are cast. In cooling they may alter a little, but they are practically a circle.

840. Are they manufactured in that way or in cylinder, and then cut?—I believe the fish globes are made into globes and then cut into three lenses, each containing 120°.

841–2. They are true circles?— Yes.

843. Those old regulations you spoke of as having been drawn up by the Admiralty, were they drawn up for the guidance of Her Majesty's ships only, or for general use?—The Admiralty dealt with the rule of the road at the time, and I suppose they were drawn up for the guidance of ships generally.

844–5. (*Captain Thomson.*) Tell me what you understand by the expression "ten points from right ahead"?—From two points abaft the beam.

846. Ten points—from two points abaft the beam to right ahead?—I think the exact meaning of it is that the whole of a light should be seen from ahead of the stem of a ship to two points abaft the beam, if you are able to do it. The full light ought to show from right ahead of the stem to two points abaft the beam. It ought also to be uniform over the whole ten points, and if you have uniform light over the ten points some light *must* show beyond the ten points.

847. (*Chairman.*) I do not know why you say that?—Because it says "ahead."

848. That does not mean ahead of the stem, does it?—Yes, I think so, when you read that none of the rays are to cross the bow of the ship.

849–50. (*Captain Thomson.*) Would not that give you more than ten points of the horizon?—It would be ten points if you took it from the middle line of the ship.

851. The side-light is never placed on the stem?—It does not matter where the side-light is placed; you reckon the ten points from the fore-and-aft middle line of the ship, and to comply strictly with the regulations every bit of that light must be equally intense; and you cannot do this without allowing some rays to cross the middle line; it is a physical impossibility.

852–3. (*Chairman.*) Does it not suggest to your mind, as it is a natural impossibility, that possibly the rule does not mean right ahead of the stem?—Well, I think that those who drew up these rules meant that both lights should be seen ahead and seen well ahead and they added screens so that none of the light should show across the ship itself. That is my view of the matter—that they never fixed in their own minds any particular angle.

854. (*Rear-Admiral Andoe.*) What do you mean by well ahead?—Whether you are close to a ship or far away from the ship, you would be able to see both lights equally well.

855. (*Captain Castle.*) You mean straight ahead?—Yes. Whether 500, 600, or 700 yards away from the ship you would see lights of equal intensity.

856. (*Rear-Admiral Andoe.*) Not within 10 yards of the ship?—No, I do not suppose they intended anything of the kind.

857. (*Captain Thomson.*) I thought you would recognise that right ahead was a given direction?—So I do. I take right ahead to mean right ahead of the ship.

858. Is not "right ahead" a given direction from the position of the lantern?—That is where the difficulty is; some people think it is right ahead of the lantern, but it is not; it is right ahead of the ship.

859. As to screening when the ship lists. You have given an instance of the relative alteration in the direction of the flame in the lamp when the ship lists. Has it ever occurred to you there is another cause for the alteration of the angle of screening due to list? Supposing you have a ship, say, 200 feet long, drawing ten feet more water aft than forward. Is it not a fact that if she lists 20° it will alter the angle of screening 1°?—I never looked at it in that way.

860. And if she lists 20° you will alter the screening 1° outwards on one bow, and inwards on the other?—If it is the opposite way from the wick, perhaps it will go to the other extreme.

861. (*Captain Castle.*) That would be rather an extreme case?—Yes.

862. (*Captain Thomson.*) A ship 200 feet long, drawing 10 feet more water aft than forward?—That is an extreme case.

863. This is not an extreme case in the channel?—You would not be allowed to leave the Tyne like that—they would be looking after you.

864. Do you not think the flame takes the direction of the draught up the funnel of the lamp?—I examined several lights at North Shields and I found that the colza flame behaved in practically the same way as a candle; but the paraffin flame appeared to remain more upright; and a gas flame with a good pressure under it goes nearly straight up. You do not see any change. It is burning under pressure. Paraffin also seems to be burning a little under pressure, but it does not remain so upright. But you have to deal with the worst cases—that is the ordinary colza, and screening must be uniform.

865. As a matter of theory we can say the lower the flame the more vertical it will go up, and the higher the flame the more it will tend in the direction of the funnel of the lamp. It does not go straight up?—I do not know anything about that.

866. Can you tell me if the ships you mentioned—those whose screening you investigated, were they all ships surveyed by the Board of Trade?—The ships I have given in now are ships that the surveyors visited in the ordinary course of duty, and they found them screened in that way, and had them altered to 4°.

867. Can you give me any idea what proportion those ships bear to the total number sailing out of England?—No, I could not, although we have a very big experience in the north-east district. The year before last I think, there were 30,000 ships cleared from the North of England—30,100.

868. I want to know how many of them were visited by the Board of Trade officials?—Of new ships last year the tonnage was 10,000 ahead of all the other ports of the three kingdoms. Fifty-two per cent. or 50 per cent. of the whole of the new tonnage in the three kingdoms was built in the north-eastern ports last year. So the surveyors had 50 per cent. of the new inspections.

869. Is it not a fact there were a great number of ships of which the Board of Trade surveyor knew nothing as regards the side-lights?—I do not think there are many escape the Board of Trade surveyors. They are always going round, and they are very active officers, and they like to do their duty.

* *See* Appendix 4, No. 1.

*Capt. A. J. G. Chalmers.*

Captain ALFRED JOHN GEORGE CHALMERS called and examined.

870–1. What office do you hold?—I am Principal Officer of the Board of Trade for the South Wales district.

872. That includes the Bristol Channel ports?—Yes.

873. How long have you been in the Board's service?—Over 17 years and a half.

874. How long have you held the office of surveyor?—Over 14 years and a half.

875. And before that were you a seaman?—Yes, I was about 18 years at sea.

876. In what capacity did you serve?—All capacities.

877. As master?—As master and officer of sailing ships and steamers, of various sizes and in all trades.

878. I think you have given consideration to the Regulations for Preventing Collisions, have you not?—Yes.

879. What is your view of their intention as to the converging of the rays of the side-lights?—My view is, and I have uniformly read the regulations as being directed to this: that the side-lights should so converge ahead of the ship as to be seen within easy distance of the ship itself, in the line of direction of the ship's head.

880. Will you just explain that a little, as to your view that the lights should cross at a certain point?—They should converge and necessarily cross. They must cross if they converge. I have always understood that they must converge because they have to be visible right ahead of the ship. I have always taken it that the words "of the ship" were understood after the words "right ahead."

881. "Right ahead" you have always understood to mean right ahead of the ship?—I have always understood it to mean right ahead of the ship. The words "of the ship" seem to be understood at a great many places throughout the regulations.

882. Now, practically, what have you considered to be the instructions to the surveyors during the time of your service in the Department?—The instructions have all along been uniform since I have been in the Department; we were directed to put a chock at the fore end of a 3-feet screen which was placed parallel with the ship's keel, and that chock was to be equal in thickness to the distance between the inner edge of the lens and the face of the screen; and the instructions told us, if we did that, we ensured the rays crossing at a proper distance ahead.

883. You consider that in the majority of cases the old rule worked out to the same result as the new one?—Yes; all the 9-inch lanterns that have been in use for the last 25 years approximated so closely as to be practically the same thing.

884. I see you work it out with a 9-inch lantern, and find the distance from the back of the lamp to the outside edge of the wick to be from 4½ to 5½ inches, and the distance from the back of the lantern to the inner edge of the lens 2 inches, and then you find distance the light travels inboard in the 3 feet to be from 2½ to 3½ inches?—Yes.

885. And that you find works out at an angle of convergence from 4° to 5½°?—Yes.

886. As to the plan of screening to the inside of the lens—did you find the angle of convergence was a variable one?—Yes.

887. Why would that be?—Because the distance from the back of the lamp to the outside edge of the burner varied. In some lanterns it was 4½ inches; in others 5½ inches.

888. Did the great bulk of the lamps that were in use give the result that I mentioned to you just now?—Yes, the large majority of the lamps gave a resultant angle of from 4° to 5½°—5½° outside—4° inside

889. Since 1892 the angle of 4° has been laid down as the angle to be adopted; what has been the effect of this screening in the South Wales district?—In the South Wales district, we found from 12 to 13 per cent. of the vessels were less than 4°. The remainder were from 4° ranging sometimes to 9°, from 4° to 6° was a common angle. We have had them 9°; and we have had them up to 12°.

890. I believe you have not got, have you, any tabulated records copied out at full length?—No, we did not keep them. I am simply quoting the verbal and written reports from the surveyors to myself, but we kept no tabulated records *in extenso*, as we did not consider them necessary.

891. What did you find as to the knowledge of masters and officers of vessels—did you find in your experience that they were aware of what in fact the screening angle of their side-lights was?—They were quite unaware of it. The bulk of the deep-sea men, I may say, stoutly contended that the lights should never converge; that they were never intended to converge by the regulations, and that they do not actually in practice converge. On the other side, the coasting-men, who were having object-lessons every night about it, quite understood the affair, and they one and all thought and contended that we were doing the right thing, and that we were simply making the arrangement of lights which had been so general for the last 35 years, uniform.

892. Did you talk the matter over with any of the deep-sea masters?—I was compelled to, because they were coming in almost every day from the beginning of 1892—for about 8 or 12 months. It took me nearly half my time—I should say three out of my six official hours of the day were taken up in arguing the point with them.

893. What did you find the result of the argument? Did you convince them?—We did convince them by an actual object-lesson, but nothing short of it. We went on board; in many instances, I went myself, and I took the angle at which the lights were then screened, and in nearly every case where they had come and said that the lights did not even converge, we found them crossing at an angle of 8° and 9°. When we screened them properly, and went down at night time and lit them, we then proved to them, we had drawn the angle in—sometimes 4°, sometimes 3°, sometimes 2°. Then they saw that the alteration was making for safety, and at once they were compelled to go back from their contention that the lights never converged, and to say that they had really erred in ignorance, and that they had not read up the question, or had not gone into the question; I ascribed it to the fact that they had simply 18 hours channel work at the beginning of their voyages, then four months at sea, and then on their return another 18 hours.

894. Are you referring only to sailing ships?—No, to the steamers going through the Canal also.

895. There are lots of ships in the Mediterranean?—Yes, but the Mediterranean is very broad and not like the coast.

896. (*Chairman.*) Did you find any cases where the screens where longer than 3 feet?—In the bulk of the vessels I have quoted where the screening was less than 4°, it was owing to the screens being more than 3 feet long, in some cases 4 feet. These had chocks at the fore-end equal in thickness to the distance from the face of the screen to the inner edge of the lens which, of course, made the angle finer, but we seldom found a 3-foot screen that had a finer angle than 4°.

897. Now, as regards foreign vessels, foreign sailing vessels, how do you find that they screened their lights?—Well, under our instructions we are not allowed to interfere with foreign vessels. All we are supposed to do is to go on board of them and observe what lights they carry, and how they are screened, and, if necessary, advise the people on board that their lights are wrong, or else we advise the consular officer; but I do not think I have been on board a single foreign sailing ship whose lights have been screened to less than 10° for the simple reason that none of them put any chock at all on the end of the screen. They simply have the screen parallel to the line of keel, and that gives an angle of from 10° to 12°.

898. And now as regards steamers?—The steamers are practically screening their side-lights the same as ours, and during the last 18 months the French, German, and Norwegian steamers seem to have all screened their side lights practically to 4°; that may be said of nearly every French, German, and Norwegian that we boarded for the purpose of our own information. One week, at Barry Dock, of those we saw—two were French, one German, and three Norwegian—and four out of the six were screened to 4°, one to 6°, and one to 3°.

899. They were all steamers?—Yes.

*Capt. A. J. G. Chalmers.*

25 April 1895.

900. Now, let me ask you a question as to your experience as a seaman—what have you found seamen of experience think ought to be the screening of side lights ?—Well, from my experience as a seaman, it appears to me that the practice that has been in vogue during the last 30 years or more than that—35 years, is what we are making uniform, and that is the practice that makes for safety. I just want to explain that in the vessel I served in, when I first went to sea, we were taught this. There was a written instruction to the "look-out," which was posted up both in our house, in the forecastle, and in the officers' quarters as well, that if you are on the look-out, and you sight anything within a point on the bow, you were to report in this way: if it were a light within a point on the starboard bow "light right ahead to starboard;" but if it were more than a point on the starboard bow you were to report it as "light on the starboard bow;" that was my experience as a seaman, and of course it grew into my mind as a seaman, that anything within a point on either bow was described as "right ahead" to starboard, or right ahead to port. All the sailing ships in those days I believe had a compass painted on the capstan-head; and, at night-time, there was always a notch in the rail or a particular stanchion picked out which gave you the bearing when you stood beside the capstan. Everything within the range of a point on each bow we treated as right ahead; and my experience is that it has grown into the mind of the seamen that everything within a point on either bow is described as right ahead; and as the lights were screened so as to show within that limit, not so far as a point on either side—I think it was an indication if you sighted a light on that bearing that it was practically right ahead, and you had to abide by the rule of the road for a vessel meeting end-on or nearly end-on.

901. Of course 4° would not give a point or anything like a point ?—No. That is 7°-15′ inside of the outside limit.

902. So that, speaking as a seaman, you would have no doubt if you had two lights within say 4°, it would be your duty to port ?—It would be my duty to port—to treat the vessel as one coming end on, or nearly end on.

903. (*Sir E. Harland.*) I think you referred to the inner edge of the lens. Have you in practice gone by the centre of the wick, or the side of the wick, when you are fixing this angle of 4° ?—Since the Order in Council do you mean ? What we did a few years ago had no reference at all to the position of the wick. We simply made the chock equal in thickness to the distance between the face of the screen and the inner edge of the lens.

904. Up to that date you went by the inner edge of the lens ?—Entirely, the wick was never mentioned in connexion with the screening. I may state that when I say the wick was never mentioned in connexion with the screening, I mean never authoritatively mentioned. In paragraph 178 of "the Instructions to Surveyors," dated 1875 (the first copy of Instructions I received), the word "wick" does occur, but it is so palpably at variance with the previous context and the accompanying diagrams, that I clearly recollect asking my seniors as to its real significance, and must have been told it was a printer's error, as I find I erased it, and substituted the word "lens" in the copy of Instructions I was then using.

905. And you think that in consequence the thickness of chock varied as much as an inch ?—As much as an inch.

906. And therefore that altered the angle of crossing the bow ?—Yes, roughly speaking from 4° to 6°.

907. From what date have you gone by the wick ?—Since 1892.

908. So that now you do not deal with the inner edge of the lens ?—Yes, but not to regulate the screening.

909. You do not deal with it unless you find the inner edge of the lens was such as to become a positive objection from the ray of the light of the wick of the chock ?—That is so.

910. (*Mr Bolam.*) If no records were kept, and you only give this return from verbal and written reports of officials, how do you make the per-centage so accurate ?—I used to tot them up every two to three months in pencil for my own information.

911. (*Captain Castle.*) Speaking of these foreign sailing ships in your district; there is a great want of uniformity in the side lights, is there not ?—A great deal; some of them have the screens pointing outwards lashed to the rigging, giving an outward angle instead of an inward one.

912. (*Captain Thomson.*) When these new regulations came out, did you visit more ships than before ?—I do not think so. We always have a certain number of surveyors in the port told off for what we call miscellaneous duty, and they go over all the vessels for the inspection of their lights, &c.

913. They go on board the vessels to see their side lights are in order and their screens ?—Yes, it is one of the most important duties surveyors have to perform.

914. Does that apply to all vessels ?—All vessels, from the transport to the coaster.

915. (*Sir F. Evans.*) Here are two approaching vessels (*pointing on the diagram*) and they each see all three lights ?—Yes.

916. That is taking it at 4°; what would a man do who was in charge of those ships ?—Port his helm.

917. Where would they get to ?—Well, if it were a narrow channel it would never occur, for the simple reason each man would be on his own side of the channel.

918. In the open sea ?—Then he would port at least a point. We never port less than that practically.

919. I have taken two ships; they are going at the speed of 18 knots, and they are 2,000 feet apart ?—Yes.

920-1. If you put your helm hard-a-port in each case they would meet exactly in the centre, because neither ship could get out of the other's way. If you ported in each case those vessels must collide. This is a distance of 2,000 feet ?—That would never arise practically, because the lights would have been visible when each ship was a mile distant from the other.

922. Not in thick weather ?—Then they have no business to go full speed, and such a case could never arise with proper seamanship.

923. (*Mr. Ismay.*) Have you not a good many Liverpool ships visiting the South Wales district ?—I cannot say we have.

924. Ships loading coals from Cardiff and other ports to India and China ?—Not many registered at the port of Liverpool. Some of these large steamers which were built at Belfast have been recently coming in.

925. There is a return put in that 43 ships of those examined were screened to 4° ?—Yes, possibly that would be due to the length of screen—the Liverpool ships coming to Cardiff are those very large ones that have been built very recently, but as a rule we get very few Liverpool registered vessels there.

926. The bulk of the ships registered there belong the Knight line ?—The Knight line; they are screened to 4°, and I think before they were a little coarser. They were 5°. I am quoting from memory, and am not quite certain.

927. What I am putting is that there were 43 per cent. of the ships examined at Liverpool as against your 10 ?—12 to 13 I make it. Our per-centage is largely swelled by the bulk of the ships from the north-east coast, viz., from Hartlepool, Sunderland, the Tyne, Middlesbro', Cardiff itself, and Swansea. They form the bulk of the ships that come to Cardiff.

928. We have had the Board of Trade surveyor, and he says they are very perfect in all their examinations ?—The north-east coast ships are all of the same type—the ones that we have dealt with. Before

we gave them the 4° angle we found them over the 4°. Now we find them at the 4° uniform.

929. (*Sir F. Evans.*) As a practical seaman, if it were practicable, would you like to see a dark lane?—Certainly not.

930. Considerably in advance of the ship?—Certainly not. In narrow waters it would be particularly disastrous. I am speaking now with a considerable experience in the coasting trade. I left big ships for a time at a very early period on purpose to get experience on the coast. I went into colliers, and I went as mate and then as master, the first part of my career, and my experience is that the 4° angle decidedly makes for safety in narrow waters.

*Capt. A. J. G. Chalmers.*

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931. You think the 4° is the best compromise?—Yes.

932. (*Chairman.*) You were speaking about a diagram?—Yes, this is the diagram we had, and I found it saved me very much talk. (*The witness explained the diagram.*)

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## Wednesday, 1st May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

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| Rear-Admiral ANDOE. | SIR EDWARD HARLAND. |
| Captain WILSON BARKER. | Captain HALLETT. |
| Mr. BOLAM. | Mr. ISMAY. |
| Captain CASTLE. | Mr. SCRUTTON. |
| SIR FRANCIS EVANS. | Captain THOMSON. |

Mr. C. HIPWOOD, *Secretary.*

Mr. ARTHUR NORMAN HILL called and examined.

*Mr A. N. Hill.*

1 May 1895.

933. (*Chairman.*) I believe you are the secretary of the Liverpool Steamship Owners Association?—Yes.

934. I understand that you have been appointed to give evidence before us as to your association's views with reference to the screening of side-lights?—Yes.

935. What is the tonnage of the vessels entered in the association?—1,588,312 gross, and 996,732 net.

936. What class of vessels do members of the association own?—I think every class of vessel. All the principal lines, the mail, passenger, and cargo lines trading out of Liverpool, in addition to which we have a number of tramp steamers in our association, and the coasting lines trading regularly in and out of Liverpool are also members.

937. Have you a list of the members giving any further particulars of the vessels owned by them?—I have it in the Annual Report for 1895 of the association; it shows the tonnage entered by each member, and the class of trade in which they are engaged.

938. What is the view held by your association as to the manner in which side-lights should be screened?—The view is that there should be international agreement upon the system which is adopted, and the association thinks that that system should be to screen the lights so as to show from two points abaft the beam to as nearly right ahead as may be possible—every precaution being taken to minimise the crossing of the lights as much as possible.

939. Why does your association object to the crossing of the side-lights?—In their view they think the crossing leads to mistakes as to the position of the vessel showing the lights that are crossing; and further that the crossing of the lights is destructive of their use for indicating quickly a change of course or change of position of the vessel which is showing them.

940. Do you think that the Order in Council of January 1893 has, in fact, increased the crossing of the lights?—That is certainly the view of the association.

941. But has it not also on other vessels diminished the amount of crossing?—Yes; we believe that to be so from the inquiries we have made.

942. But if that is so, and the crossing of the lights is so objectionable, how is it that the shipowners did not protest against the practice before the Order in Council of January 1893?—Well, speaking for my association, I say that until the Order in Council of 1893 was made, the shipowners had not realised fully how much the screening which was being adopted by the Board of Trade permitted the crossing of the side-lights; but it was the fact that the Order was passed, or the fact that the Board of Trade issued regulations immediately preceding the passing of the Order which first drew the shipowners' attention so prominently to the crossing.

943. Did they then regard the order of the Board or Trade as a departure from the letter of Article 3 of the International Regulations?—Yes.

944. What did they understand the rule in Article 3 to be before the Order in Council?—That the lights were to be so screened as to prevent their being seen across the bows of the ship.

945. What do you understand by "crossing the bow"?—Not only across the actual bow of the ship, but also across the line projected ahead of the ship from the bows.

946. As a matter of fact you now find that that rule was not observed?—Not always; but there was considerable difference in the practice of the surveyors. Some surveyors screened so as to prevent as much as possible the lights from crossing. Whilst others made them cross immediately ahead of the ship.

947. Do you think that the shipowners have suffered from this practice?—That is the opinion of the association. They think that very many ships coming into collision have come into collision owing to a mistake being made as to whether or not the other ship was going to obey the rule of the road, and they think that that mistake has been caused in many cases, especially in narrow channels, by the crossing of the side-lights.

948. I understand you to admit that the Order in Council may have brought about a more uniform practice?—That is so; but we think that it has not brought about the right practice.

949. If there is no crossing, is there danger from an unlighted space ahead of the ship?—The members of my association have never heard of such a danger existing.

950. But may not that be because in fact the lights have always crossed as much as they now cross?—I

*Mr. A. N. Hill.*

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think not, because on many vessels they used to cross much less than they now cross under the Order in Council.

951. You attach great importance to the side-lights indicating the change of course, or the direction of the vessel?—Yes; the greatest possible importance.

952. Do you think that anything else should give way to that consideration?—No; I think everything should give way to that consideration. The masthead light indicates the presence of the vessel, and everything should be done to make the side-lights indicate as promptly as possible any change of course.

953. Have you any precise suggestion to make as to the best mode of screening?—No; the association do not offer any precise suggestion. They want such screening as will permit of the lights covering the ten points, and they also want to prevent, as far as possible, the crossing of the lights.

954. You also, I understand, attach equal importance to the system that is adopted being made international?—That is so.

955. Does your association consider there is at present international agreement?—Not since the Order in Council of January 1893.

956. But there was before?—Yes.

957. Why do you say that the Order in Council affects the international agreement?—We say that it is inconsistent with Article 3 (D), and a shipowner who has his side-lights fixed as required by the Order in Council does not comply with the terms of that article.

958. Why do you say that the Order in Council is inconsistent with the article?—My association contend that the words "across the bow" used in Article 3 (D) mean, not only across the deck of the ship but across the line of the keel projected ahead of the vessel. Therefore, whilst the article itself provides that lights shall be screened so as to prevent their being seen across that line, the Order in Council requires that they shall be so screened as to show across the line, and the association has been advised by counsel that their reading of Article 3 (D) is the correct one.

959. You refer to the opinion of Sir Walter Phillimore and Mr. Joseph Walton?*—Yes.

960. The whole question turns, does it not, upon the meaning of the words "across the bow"?—Yes, the association take it that those words are in common nautical use, and everyone understands their meaning.

961. Had your association any communication with the Board of Trade before the Order in Council was made?—Yes, in November and December 1892 my association objected to the regulations that the Board of Trade had issued to its surveyors—previous to those dates.

962. Upon what grounds did your association object to these regulations?—We summarised them in a letter addressed to the then President of the Board of Trade on the 9th December 1892. 1st. Because it is in conflict with the international regulations. 2nd. Because screening at less than 4° as now practised by the majority of its members is safer in regard to risk of collision than screening at 4° 3rd. Because, unless the regulation is made internationally binding, shipowners may be held liable in courts of law whether British or foreign for a breach of the existing rules, for it can be shown that they have been, and therefore could be again screened to a less degree than that required by the Board of Trade, and it is apprehended that an order of the Board of Trade upon this subject which is in conflict in certain cases with the international rules will not afford any defence to an action on or a breach of those rules.

963. When making those objections did your association make any suggestions to the Board of Trade?—Yes, we suggested in the same letter that if the instructions issued by the Board were, that no lights should be screened at a greater angle than 4°, then objections would disappear, and we suggested the adoption of such instructions pending any alteration in the international rules.

964. What was the result of your association's objections?—We failed to convince the Board of Trade that our view as to the angle of screening was the right one, but we thought we had convinced the Board of Trade that their instruction was contrary to the existing rule of the road.

965. Why do you say this?—In the correspondence we had with the Board of Trade at that time they wrote, stating "the Board is at present considering "whether it may be possible to make the position of "shipowners as affected by the regulation for pre-"venting collision at sea more secure, either by the "issue of an Order in Council or by other means." And afterwards they did in fact get the Order in Council.

966. Did your association make any reply to this letter?—Yes, we replied on the 2nd January 1893, pointing out, that though no doubt, as regards the United Kingdom, the necessary protection could be given to a British shipowner by an Order in Council or by an Act of Parliament, no protection could be given to the British shipower in foreign courts without international agreement, in a country which had adopted the international rules.

967. Was your association satisfied with the Order in Council?—No, not at all. We thought we were far worse off under the Order in Council, than we were under the regulations. We took it that the Order in Council showed clearly that the new instructions were alterations in the existing international rule of the road, and that such alteration had not been adopted by any other Powers.

968. Have you any special reasons for believing that any of the Powers who were parties to the international regulations look upon the Order in Council as an infringement of those regulations?—The memorandum that is printed on pages 140 and 141 of the Blue Book that was issued in 1894*, containing the opinion of the Netherlands Government, I think, shows clearly that they look upon those alterations as a serious infringement of the international regulations.

969. I think you have a copy of the case for the opinion of Sir Walter Phillimore and Mr. Joseph Walton?†—Yes, the one referred to.

970. (*Sir E. Harland.*) From your early answers, Mr. Hill, are we to gather that the shipowners at Liverpool were not aware of the angle to which the lights of their vessels had been screened for years before that Order in Council was issued?—No, I think they were not fully aware—it varied in different ships and with different surveyors.

971. Perhaps you have seen an appendix which is before us here, which shows the angle to which certain side-lights in the Liverpool District were screened prior to the 4° rule?—No, I have not seen it.

972. In glancing down that list I find that some of the vessels had been screened to $8\frac{1}{2}°$, and a great many to 5°, 6°, and $6\frac{1}{2}°$; two or three perfectly parallel with the keel; and a few to 1°; but glancing down the list, it appears to me, that something like 4° would be about the average?—Are these vessels Liverpool vessels.

973. They are classed as having been examined in the Liverpool district.

974. (*Mr. Ismay.*) I think these vessels are probably not in the association to which Mr. Hill is secretary?—I do not recognise many names that I see in this list.

975. (*Sir E. Harland.*) Then do you think that before the Liverpool shipowners raised their opposition to this Order, they went into the question at all, or examined the angle of the lights, or did they merely take action in the matter from what was reported to them by half-a-dozen men, who appeared to be disposed to move against this Order?—We had a number of meetings when the instructions were first issued—conferences with the marine superintendents

* *See* Appendix 1, No. 3.

* Parliamentary Paper, C. 6869. † *See* Appendix 1. No. 3.

of the lines, and with different captains, and specially appropriated pilots—the question was gone into very carefully at the time before the Order in Council was issued; and ever since then, we have been strongly opposed to the introduction of any crossing of the side lights.

976. Before they took this direct action against the Board of Trade did they total up and strike an average of what their own ships had been screened to?—No, I do not think they did; and I think the information that they have obtained since has, in some instances, been a great surprise to them.

977. Do you think that they have been surprised since the matter has been gone into by the Board of Trade, and the returns published, to discover that there was a great variety of screening in existence?—Very much surprised indeed to know that.

978. And do you fancy that if they had had that information before this action was taken in Liverpool, that they would have been less disposed to take action?—I think their opinion would have been made stronger by it.

979. Though they knew the average had been discovered to be less than 4° ?—No, what I mean is that the view advanced by their nautical advisers was that the crossing of side-lights was most dangerous, and certainly many members of my association had taken steps to guard against it on their own vessels.

980. But from the inquiries they subsequently made as to the screening of their ships do they recommend that there should be no crossing of lights, although they have discovered that their own ships have been sailing all these years with the lights crossing?—As little as possible.

981. Will you define that expression "as little as possible?"—We think that the rays of the light must spread.

982. Is that necessary? Could you not screen a light so that the rays could not possibly spread?—We have been advised by our nautical advisers that the rays must spread somewhat; you cannot get a point of light.

983. Why not? Supposing the chock was made so that the further you went ahead of the ship the further would the rays of light diverge; that is, the further you went away from the ship the less chance there could possibly be of the lights crossing?—They would not wish, certainly, such screening as that.

984. They would not go as far as that?—No, certainly not.

985. Then they prefer that the lights should be given a fair position, perfectly parallel with the keel, and that there should be no crossing whatever, at any distance?—They would prefer that to crossing.

986. Then what is their reason for preferring that class of screening now when their ships have been sailing for so many years with the lights crossing? Would not that be starting an entirely new theory—a new practice, to now ask for a condition of screening totally different to what had ever existed before?—In many of the vessels where inquiries were made it was found that the angle of crossing was from 2° to 3° and no more.

987. Then you go so far as 3°?—No, I do not know that we would if we could get 2°.

988. Then were more of the lights of the vessels belonging to owners objecting screened to more than 3°?—Some certainly were to more.

989. Has there been any complaint made by the pilots or by ships coming into collision about this screening?—There have been a certain number of collisions in the narrow channels into the Mersey.

990. But do you think that is a matter which can be decided by screening, or avoided by screening?—The view my association take is that it is in narrow channels when vessels must necessarily approach on almost exactly opposite courses that the danger comes in.

991. But under those circumstances do you think that the question of screening is so important as in the open sea in view of the pilots keeping to their own sides of the channel, and, therefore, rather judging from their surroundings than from the precise lights of the vessels?—But to judge from precise surroundings is certainly a difficult thing in the narrow channels across the bar; you are getting quite out from the river—there you have very little to guide you.

992. You are speaking of the narrow channels inside the bar of Liverpool?—Yes, right up to the bar and across the bar.

993. And from the bar up?—Yes, from the bar up.

994. (*Mr. Scrutton.*) You are here to advocate 2° screening?—No, we would not like to say that. We are told that there must be some crossing of the lights, and we would like it to be as little as possible.

995. Have you been into the question of the effect of screening at 2°, 3°, and 4°?—No more than being present at all these discussions.

996. The Board of Trade tell us that they attach no importance to the question of the dark lane, but they do attach importance to what is beyond the dark lane, and that is what they term the field; and you will see at once that with a 4° screening you have a very much larger field than with a 2° screening. The narrower the screening the narrower the field; do you follow that?—The field?

997. The space covered by the rays of both side-lights after thay have crossed the middle line?—Yes, I see.

998. Then you recognise that a 4° screening gives you a much wider field than a 2° screening?—Yes.

999. And we are told by the Board of Trade that less than a 4° screening makes it far too narrow a field for the vessels when approaching to see the three lights. Have you looked at that question at all. If you have not, I will not ask you anything more about it?—I do not think that has ever occurred to anyone in the discussions—that it is an advantage to have a large area in which you see the three lights; it has never occurred in the course of our discussions that that was an advisable thing to have.

1000. That is the point that the Board of Trade official made here as a justification for the 4° screening, and he showed us what would be the width of the field. That is a question you have not paid attention to?—No, it is quite a new one.

1001. (*Mr. Bolam.*) I suppose you have not counted up the number of vessels given in the list which Sir Edward Harland spoke about; it is a list of vessels reported to the Board of Trade by the surveyors in the Liverpool and London districts, showing the angles to which their side-lights are screened?—No, I have not really seen the list before.

1002. I have, and if you take the trouble to count them up, you will, perhaps, check my per-centage. I find the Board of Trade list gives 137 vessels, and of these they have reduced the screening of 26 per cent., and increaseed the screening of 40 per cent.; therefore, taking their own figures, they must have increased the screening in a large per-centage?—By increasing the screening I understand you mean that they have made the lights cross more.

1003. Yes, they formerly had the vessels screened 40 per cent. to a smaller angle than 4°, and 26 per cent. to an angle larger than 4°; so that taking their own tables, that would show that in the Liverpool district the new rule has led to an increase rather than a decrease of the angle of screening on the average?—I have not seen the list, but speaking for the vessels in my own association it certainly tended to increase.

1004. (*Captain Castle.*) How do you interpret Article 3 (B) of the Regulations for Preventing Collisions: "On the starboard side, a green light "so constructed as to show an uniform and unbroken "light over an arc of the horizon of 10 points of "the compass, so fixed as to throw the light from "right ahead to 2 points abaft the beam on the star-"board side, and of such a character as to be visible "on a dark night, with a clear atmosphere, at a dis-"tance of at least two miles." What do you consider right ahead; is that right ahead from the light,

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or right ahead from the stem of the ship?—We have taken it that it must be right ahead from the lights if they are not to cross.

1005. I am not asking anything about crossing; I am asking your interpretation of the article: whether it is right ahead from the lights or from the stem?—I would sooner not venture an opinion. We think that we must read all those articles together, A, B, and C, and D.

1006. (*Captain Thomson.*) I suppose in interpreting this rule, your association had ideas about the meaning of the words used?—Yes.

1007. Can you tell me what their idea was with regard to the expression "Showing a uniform light "from two points abaft the beam to right ahead"?—We have often discussed it: the difficulty appears to us to be that if you start from two points abaft the beam, and make your lights show 10 points, you get the 10 points right ahead of your light. And then the other article says, that your lights are not to cross: but the article you have quoted from says, the light is to show from right ahead. I am afraid we have have not come to a satisfactory conclusion as to what is the proper way of reading all the articles together.

1008. (*Mr Ismay.*) In your association, have you many owners who cover their own hulls and freights?—Some, but not many, cover the entire risks; but a large number of them cover a substantial risk on each of their vessels.

1009. So that, apart from a general reputation for safety, they have a pecuniary interest in the safe going of their vessels?—I think every single member has, and that strongly.

1010. You are a member of the firm of Hill, Dickinson and Hill, as well as secretary to the association, are you not?—Yes, I am a member.

1011. You have considerable practice in the Admiralty Courts, in the nautical part of it?—I think so.

1012. And in the Mersey, what is the experience as regards collisions there?—One of the most common causes of collision in the Mersey is the mistake made of one ship coming to the erroneous conclusion that the other ship is not going to obey the rule of the road.

1013–14. I think you were asked by Sir Edward Harland as to whether vessels did not keep their own sides of the channel. Are there not many sailing ships passing in and out of the Mersey?—Yes, many.

1015. Which necessarily must tack?—Oh, yes; they must tack going out of the river. Many collisions have been caused from that cause also.

1016. (*Sir Edward Harland.*) Just to follow that up, are eight-tenths of the tonnage coming into and leaving the port of Liverpool sailing ships which are under tow in charge of a tug?—If of any size they are. We have a good number of small coasting schooners going out, and they do not have tugs.

1017. (*Mr. Ismay.*) The bulk of collisions in the Mersey do arise from small coasting schooners going up and down the Mersey, do they not?—Yes, certainly.

1018. Your association did not so much object to the angle of screening; they were willing to leave that in the hands of experts, but they thought that the angle was too broad?—Yes.

1019. And they wished a finer angle?—Yes.

1020. But they did not come to a conclusion as to what that angle should be?—No. At the beginning of the discussion we suggested, in our letter which I quoted, that if the Board would say that the angle was not to exceed 4°, we would be quite content to leave the matter for the Board to come to the best possible conclusion if they could get international agreement.

1021. The practice has been in arranging the screening of the lights to leave it to the marine superintendents and the Board of Trade surveyor?—Yes.

1022. And it was only in consequence of the Board of Trade's action that the shipowners' attention was called to the subject?—That is so.

1023. And they since have gone into it rather more fully, and have obtained information which they previously did not possess?—That is so.

1024. And where they have gone into it they have been rather anxious about it, because they think that there ought to be uniformity of screening?—Yes, and also, I may say, as little crossing as possible.

1025. But as regards the international part of it, there ought to be no doubt as regards that?—Certainly; they are very strong indeed upon that point.

1026. In case of collision with a foreign ship?—That is so; and you see we have to go into foreign waters. An Atlantic liner leaving Liverpool in a week is in American waters, and her screens have to be in accordance with the existing American regulations, and she is back again within 14 days, or at the end of a month, at Liverpool, and then her screening has to be in accordance with the English regulations.

1027. Owing to the extent to which the Mercantile Marine Regulations interfere on the other side, the British subject is more liable to be hit than the foreigner?—Far more.

1028. Many vessels trading out of Liverpool have special pilots?—Yes, all the regular lines, I think.

1029. (*Rear-Admiral Andoe.*) I presume that your association considers it most desirable that the side-lights should be seen in their full power right ahead of the ship, at their best?—At their best.

1030. That is to say, as well right ahead as at other points?—Yes, subject to this qualification, that they do not consider it absolutely necessary that they should be seen at the bow of the ship, and in immediate proximity to it—to the stem of the ship.

1031. I am not speaking of the stem, but of right ahead—ahead from the keel?—Yes, certainly.

1032. That is, that the full light should be seen right ahead in that direction?—Certainly.

1033. Did the shipowners make any exhaustive experiments to certain how the screens should be placed so as to ensure the full power being seen right ahead?—No. You mean on shore?

1034. Any where?—When the discussion first arose, and ever since, the members of the association have been getting constant reports from their officers, and there has been constant discussion between the shipowners and the officers upon the subject.

1035. They have not made actual experiments on the shore?—No; no experiments of that kind.

1036. Are you aware that if the screens are not set at an angle, the light would not be seen at the best right ahead of the ship?—That is neither side-light?

1037. They would not be seen at their best. You would see a dim light, but you would not see them at their best right ahead, unless the screen were set at a certain angle; were you aware of that?

1038. (*Chairman.*) Do you mean right ahead of the ship, or right ahead of the lamp?

1039. (*Rear-Admiral Andoe.*) No; right ahead of the ship in a line with the keel, even half a mile, or a mile off, you would not have the full power of the light?—No, that point has been discussed several times. Upon a line projected from the stem of the ship, you would only have, for a certain distance, the reflected rays from the lamp. I do not think the members of the association would object to some distance being lighted in that way, but beyond a certain distance, they would like to get the full light.

1040. Do you think you would get the full light right ahead?—They would like to have it.

1041. Then you would be satisfied with an inferior light right ahead of the ship, anything within a mile?—Oh no, not so much as that.

1042. What distance would you say?—Well, it is difficult, I cannot say.

1043. It is an important point of navigation, you know. It appears from a report which has been put in by Sir Digby Murray* — that

* *See* Appendix 2, No. 5.

several experiments were made and that in several cases right ahead, even with the screens set at an angle, the light was very inferior to what it was at any point on the bow?—That is, from a person standing stationary and taking the light, I understand.

1044. On the line of the keel at a mile or two miles?—Yes, by a person standing on the land taking the light.

1045. Yes?—I quite appreciate it.

1046. So that the light is inferior right ahead even with the screen at an angle?—Yes, but we take it that another vessel approaching at any distance—such a distance as you have named, a mile, for instance—would, from the movement of the vessel herself, or from the inaccuracies of steering, or anything else, be getting the light full.

1047. Was the objection to the 4° screening made principally by the captains of ships, or by the pilots?—I think everybody concerned. I do not know that it was one more than the other.

1048. Are you not sure that the pilots took action first about it?—Oh, the pilots complained very much about it.

1049. Do not vessels approaching Liverpool under steam, or in tow, always keep on one side of the river according to the local regulations?—They are supposed to.

1050. They ought to?—They ought to.

1051. Therefore the side-light would not affect them materially if they followed their regulations?—But they do not always.

1052. We have here a report* from Sir Digby Murray, which says that 40 per cent. of the vessels sailing from Liverpool had their side-lights screened to less than 4°; can you say whether that fine screening was adopted by any particular class of ships; whether more by the larger craft, or more by the smaller craft?—I think it must have been done by the large craft, because it is the large ships that are in my association, and certainly to the members of my association the instructions that were issued in 1892 meant a broader screening. They were all affected, having to put the screens to make the light cross more.

1053. Were the screens of vessels in your association carefully examined before any alteration was made in order to comply with the regulations?—Yes, I think a great many; a great many of them have passenger certificates.

1054. Have you got, or could you give us, a return of how they were affected by the regulations?—I think I could get it. I have not got one. I have not got any record from which I could get it.

1055. In proposing to screen the side-lights to 4°, are you aware that the International Conference at Washington recommended that the lights should be screened to not more than half a point?—It is not incorporated in the Washington Rules as they are put forward.

1056. But that was the spirit of the regulation, was it not?—But the rule stands that they shall be so screened as to prevent their being seen across the bow. I would point out with reference to that, when the Blue Book* was issued showing in one column the regulations in force, and in the other column the revised regulations, my association came to the conclusion that it was the intention to repeal the Order in Council of January 1893, because if you will refer there, you will see the Order in Council is set out as paragraph E. to the regulations now in force, and there is a blank space left in the corresponding paragraph of the revised regulations; and in the revised regulations they repeat the prohibition that the lights are not to be seen across the bow.

1057. This expression "across the bow" appears to be understood differently by lawyers and seamen. I believe I am right in saying that the lawyers have sometimes taken it that "across the bow" means close to the stem, whereas seamen generally understand "across the bows" as a distance from the ship?—Well, we always understand it just as much as we understand that a crossing ship is a ship that is going across the line projected ahead, and not over the deck of the ship.

1058. Are you aware that it would be almost impossible to prevent the rays crossing?—Yes.

1059. In the report from the German Lloyd† on the fixing and screening of the side-lights before the Committee, I see it is stated that on most ships which are not English, the screens are set to 6° or 8°?—Yes, I have seen the report.

1060. Have you any reason to doubt that as being correct?—In the case of ships belonging to the Netherlands I should doubt whether it is correct.

1061. (*Chairman.*) Has your association formed any opinion as to the part of the lamp or light from which the screening should be measured, whether it is the outer edge of the wick, or the centre, or the inner edge or the centre of the lens?—There have been many discussions, but I am afraid there has been no conclusion. It is difficult to express an opinion, but I think the majority are in favour of the inboard edge of the wick.

* *See* Appendix 2, No. 2.

* *See* C. 6869, page 148. † *See* Appendix 2, No. 10.

Mr. PETER SAMSON recalled and further examined.

1062. (*Mr. Scrutton.*) I think you have stated that with 2° screening and with a ship 60 feet broad, half the breadth of the field at a quarter of a mile is only 23 feet?—That is right.

1063. Can you tell me what half the breadth will be at 1,500 feet at 4°?—75 feet.

1064. Then we are agreed that there is all that difference between 23 feet and 75 feet?—Quite so.

1065. How does it occur that in screening at 4°, and in screening at 2°, one is not exactly double or half of the other?—It is double from the crossing point, but not from the lights.

1066. (*Sir F. Evans.*) On each side of the light it would be the same?—Yes; taking it from the crossing point, but not from the light.

1067. (*Mr. Scrutton.*) You have used an expression, "the mingled rays"; that is the first instance I think that we have had that expression in the evidence?—Yes.

1068. Does that mean that we do not see the two lights distinctly—separately?—No; you see each light distinctly.

1069. It would be quite right to speak of seeing the two lights?—Certainly; I put it in that form so as to make a distinction between the lights within and without the field.

1070. (*Sir F. Evans.*) The exact course of a ship that is approaching another cannot be ascertained as long as you can see the three lights, can it?—I should say that one vessel was practically ahead of the other if each vessel could see the other three lights.

1071. You would call it ahead although they may vary as much as a point out either side of the bow?—Half a point or rather 4°.

1072. Say half a point. What is the object of keeping the vessel that is approaching so long without the knowledge of the course of the other. I cannot understand why you want to keep a vessel approaching another in sight of all the other three lights until he is almost on top of her. I was taking the instance of myself approaching another vessel and I see his three lights, and I do not know which way he is going why do you want me to stand on until I am almost on top of him before I can tell which way he is going?—I do not want anything of the kind. The moment you see the three lights you know that a vessel is approaching you almost end on, and it is your duty to get out of that position as soon as you can.

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1073. Then you agree with me, the wider you make the field, the greater the space during which I cannot tell how the vessel is. Why do you not narrow that field in order that with a slight variation I can find out exactly where she is?—There are several reasons. One is that you cannot get the light uniform throughout the range required by the Regulations. Then another important reason, is that the field in which both lights are seen becomes so narrow at say a mile from the vessel, that two vessels meeting on parallel courses might see each other's green light without the red light and still come into collision if they kept on. It is, I think, of great importance that the field should be broad enough to admit of the "green to green and red to red" rule being adopted with safety, and that width of field cannot be got with lights screened to less than 4°. I may point out that there is no definite Regulation to guide those on board vessels in the position I have assumed, and if the "green to green and red to red" rule were not dependable, both vessels in their desire to give each other a wide berth might unknowingly take a course which would lead them into collision.

1074. Would you call that seamanship for a man to run it so fine that he had the green light there?—In thick weather those vessels might get there without seeing each other's side-lights, and in that case seamanship would not enter into the question.

1075. I will take a case—I very often go across the Atlantic—which I have been in myself, where we have been in the most dangerous position, perhaps, of all, namely, of shifting fogs, where you run in and out all the time. What a pity it is to limit the time during which you may determine the course of a vessel approaching. He runs suddenly out of a fog—he sees no lights that would make him certain of his position until he is almost jumping on a man's head?—But half the breadth of the field in which both lights are seen is, at the extreme distance of two miles (12,000 feet) from the vessel only 800 and some odd feet—about 820 altogether, so that a ship anywhere within that half field knows that she is practically right ahead of the other ship. That, I think, is most valuable information, and it is information which she would not possess if the lights did not cross, for in that case each vessel would only see one side light of the other vessel and consequently be uncertain within 10 points as to the direction in which she was steering. A slight movement of the helm would move the field of mingled rays off the other vessel and then she would know by seeing only one side-light, that her own lights had been seen by your vessel, and the direction (port or starboard) in which your vessel had altered its course. I think there is a great deal of misconception regarding the time required to turn a vessel through 4° of a circle; it is only a matter of seconds and the time occupied in turning through the last two degrees must be almost infinitesimal.

1076. (*Captain Thomson.*) Is it not a fact, that the only case in which the screening touches, so to speak, the rule of the road is that where two vessels are approaching nearly end on, or where one ship is overtaking the other?—I think so.

1077. Do you not think the question of screening is perhaps more important at short rather than at long distances, for this reason: that at a long distance there is not the present immediate risk of collision, and the rule of the road does not take into account that you could tell by the alteration of the bearing of the light the direction in which the ship is steering to a certain extent. But that occurs at a long distance, two miles, or one, or even half-a-mile with slow ships. You can watch your ship and alter your course accordingly; in fact, it is a common thing for ships to port when meeting long before there is risk of collision?—Well, not always; I think they frequently keep on until fairly close, that is, until they are within a mile or so of each other.

1078. Perhaps I should not have said "always"; I should have said "generally." Do you not think the question of screening is of more importance at short distances, when you have to act at once upon the rule of the road, than it is at long distances?—I certainly think so. Of course, the difficulty is in knowing the distance you are from the ship, as much depends upon the condition of the weather. In fine weather, you can estimate the distance very closely; but if the weather is at all thick, it is then a very difficult matter.

1079. (*Captain Castle.*) Because you see the masthead first?—Yes, but the weather also materially affects the distance at which you can see that light.

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## Thursday, 2nd May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Mr. BOLAM.
Captain CASTLE.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

*Mr. J. G. S. Anderson.*
2 May 1895.

Mr. JAMES GEORGE SKELTON ANDERSON*, called and examined.

1080. (*Chairman.*) I think you are a member of the firm of Anderson, Anderson, and Co., are you not?—I am, and one of the managers of the Orient Company.

1081. I think you have come here at the request of the General Shipowners' Society?—I have.

1082. Do I understand that you have not made any actual experiments for the purpose of giving this evidence?—No, I have made no experiments, and I do not offer myself as a technical witness.

1083. When did this question of side lights first come prominently before your notice?—About the middle of 1892.

1084. How did it arise?—It was reported to me by some of the captains and the overlookers of the ships that the Board of Trade surveyors were increasing the convergence of the lights, and they looked upon that step with some misgiving.

1085. I think you went to Whitehall?—I did.

1086. And saw Sir Digby Murray?—I did. I was accompanied by our senior captain, Captain Ruthven,

* The Committee were subsequently informed that the Sunderland Shipowners' Society entirely agreed with the statement prepared by Mr. Anderson, and consequently did not deem it necessary to send up any of the members of their Nautical Committee to give evidence.

of the mail steamer "Ophir," and by Mr. Posgate, our senior pilot.

1087–8. Would you tell the Committee what took place?—Sir Digby Murray told us that he had studied the subject for years, and had made exhaustive experiments at Shoeburyness. He explained that side lights had never been screened without some degree of convergence, and that if they were screened with no convergence there would be a dark lane ahead of the ship. He further stated that of late years, at any rate, ship's side lights had been screened to varying degrees of convergence and divergence, and that the sole object of the new regulations was to insure uniformity. He said that instead of 4° of convergence being dangerous, as we feared would be the case, it would, on the contrary, make for greater safety, because the large majority of ships which his surveyors had, up to that time, examined had their lights screened to a greater angle than 4°. Sir Digby Murray illustrated with two pieces of paper his dark-lane theory, and the danger which the dark lane caused to two ships of different beam approaching each other end on, and dwelt upon the recommendation of the Washington Conference that side lights should be screened to 5° of convergence each. The recommendation of the Conference, he said, was founded upon a French translation of what purported to be a Board of Trade rule; but he thought there was some mistake as he did not believe it had been the practice of the Board of Trade to screen to so great an angle as 5°. Nevertheless there was the recommendation of the Conference, and he had to meet it. He had not, however, gone the full length recommended. He had only gone to 4°, and that had been in the past the practice of the best lines. For instance, he said, one of the steamers belonging to the Orient Company (with which I am connected) the "Lusitania" on her then recent arrival in Liverpool, had been inspected by the Board of Trade surveyor, and was found to have a convergence of 4° each side light, and the surveyor consequently made no change. I went away unconvinced, and a good deal puzzled. I was not able to give Sir Digby Murray an effective answer at the time; but I ascertained afterwards that in the case of all steamers and vessels with which I had any connexion the chocks had to be reduced in depth under the new regulations, thereby giving greater convergence, and in no cases had the depth of chock to be increased, and in the case of the "Lusitania" the chocks had been cut down in London before she proceeded to Liverpool.

1089. What conclusion did you form from that?—I came to the conclusion that Sir Digby Murray was wrong in thinking that there had been no change under the new rule with regard to the practice of careful owners, and I concluded that the application of the 4° rule had, in point of fact, led to a change in the direction of greater convergence than was the practice before.

1090. You gave expression to those views, I think, did you not?—Yes, in February 1893, I read a paper about the screening of the ship's side lights before the Chamber of Shipping of the United Kingdom, not dealing with the subject in a close technical way, but in broad terms (I hand in a copy of the paper*), with the result that a deputation from the Chamber waited on the President of the Board of Trade on the subject, and represented the danger arising, as it appeared to them, from the enforcement of the new order.

1091. I think that the deputation handed in a protest from the pilots at the same time, did it not?—It did, and I hand in a copy of that protest also.†

1092. Your view is, is it not, that the Board of Trade action was taken in consequence of the Washington declaration?—Yes, on this occasion, as when I previously waited upon Sir Digby Murray, the Board of Trade referred to the decision of the Washington Conference as imposing on them a certain necessity to move in the direction of the new order, and the report of Sir Digby Murray and Mr. Samson on the subject of their experiments* shows that these experiments were undertaken in connexion with the Report of the Washington Conference.

1093–4. What was the result of the deputation?—Sir Digby Murray presented statistics, and in the face of these the deputation fully recognised that it was necessary that something should be done to bring about the uniformity in practice which they hitherto had imagined the Board of Trade regulations and surveyors had secured for them. Those who had given most attention to the subject were of opinion that no harm but, perhaps, the reverse would result from allowing some small convergence of the light; in fact, that if the full brilliancy of the light were to be shown ahead of the lamp as well as for the remainder of the 10 points over which the Act requires a uniform light, it would be unavoidable that some of the rays should cross at a certain distance ahead of the ship. The question to be determined was the degree of convergence. The deputation remained firmly of opinion that 4° of convergence was too much and made for danger, especially in narrow waters.

1095. After the deputation, it was discovered, I think, that the Washington recommendations seemed to be based on misconception?—Yes, up to the time of the deputation it had never been pointed out, so far as I know, by anyone that the Washington Conference had unwittingly recommended an angle of convergence double of that which they had intended to recommend. Public attention was first drawn to this fact in a paper in the "Nautical Magazine," by Captain Ruthven.

1096. What was the blunder?—Well, the blunder appears pretty clearly from the protocol of the proceedings. They are dealing first with the angle formed by the crossing of the rays from the two side lights, and they go on to apply that angle to each side light, forgetting that the subtending angle of the triangle in this case is double the angles at the base. What the Washington Conference did, in point of fact, recommend, was that each side light should be screened to a convergence of half a point; but obviously what they intended to recommend was that the sum of the convergences of the two lights should be half a point—*i.e.*, that each side light should have a convergence of a quarter of a point, that is, just over $2\frac{3}{4}°$.

1097. Did you bring this point to the notice of the Board of Trade?—The Board of Trade, notwithstanding these representations of which I have spoken, persevered with the application of their new order, and in consequence of this the then President of the Chamber of Shipping of the United Kingdom, in the months of February and March 1893, corresponded at some length with the then President of the Board of Trade, urging on his notice the blunder on which the new order was based. I have the permission of the Chamber of Shipping to hand in, as I do now, a copy of the correspondence† referred to. The result was that another Conference was held at the instance of the Board of Trade in which Mr. Corry, who is to give evidence after me in this matter, and I myself were associated with others on behalf of the shipowners.

1098. What took place at this Conference?—Sir Digby Murray again told us that he felt compelled to go as high as 4°, because of the Washington Conference and of his own experiments, and because it was about the average of the practice in the past; but he then admitted what we had all along contended for, that 4° might be too much convergence in narrow waters, and said he would not be opposed to having two different screenings, one for narrow waters and one for the open sea, but that suggestion did not seem to any of the deputation a practical one.

1099. Was the question of lamps referred to?—Yes, we again urged upon the Board the dangers that were feared from this degree of convergence in screening,

* See Appendix 6, No. 1. † See Appendix 6, No. 2.

* See Appendix 2, No. 5. † See Appendix 6, No. 3.

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and fully recognised the need for uniformity and that something should be done to secure uniformity; we pressed upon the Board of Trade the need there was that the lamps themselves should be of correct and uniform construction in every detail, without which uniformity of screening was unavailing. We told the Board that the lamps at present in use were extremely irregular, many of them being thoroughly bad in every way. Mr. Corry will speak as to the construction of lamps, so I will not anticipate him. The Board said it was impossible for them to undertake the surveillance of the lamps themselves, they had not sufficient staff for the purpose. I suggested that they should invite Lloyd's Registry to undertake it as in the matter of testing chain cables and fixing load-lines.

1100. Do you desire to offer any opinion as to the exact angle to which the screening should be reduced?—No, I do not feel exactly qualified to do so, but later on I will express approval, as complying with the existing Act of Parliament, of a certain order which appears in the Instructions to the Board of Trade surveyors in 1875.

1101. I understand that you think that 4° is too much?—I do think so.

1102. Now, will you give me, if you please, the reasons on which you base that opinion. First of all, as to the Act of Parliament?—Well, as to the Act of Parliament dealing with the matter of side lights, I consider that the two chief conditions, the limitation to a certain arc, and the requirement of full power over that arc, as required by that Act, are incompatible with each other and cannot be fulfilled together. From the study I have given to the Act, and from such practical knowledge as I possess, I am of opinion that those who drew the Act did not intend that there should be any convergence, and were not aware that it is impossible to get the same strength of light ahead as abeam unless some convergence is allowed. I am in favour of the nearest approach to parallel screening consistent with showing the full power of the light ahead of the lamp; that is, within the arc of 10 points, as required by the Act.

1103. I think you have considered the Instructions of the Board of Trade to surveyors, have you not?—Yes, I think that the Board of Trade Instructions to Surveyors of 1875, page 98, show what the best practice was at that date. I think that that practice would comply with the Act, and it is to that practice that I referred a few minutes ago when I said that I could express approval—given the existing Act. I quote the following from the Board of Trade Instructions of 1875: "Surveyors will probably find that if the "inboard edge of the wick touch a line that is parallel "with the keel of the ship, and that cuts the outer "edge of the forward end in the inboard screen, the "rays will cross suitably."

1104. Are you aware that this is inconsistent with other Board of Trade Instructions, issued prior to 1892?—Yes, I consider that is a very clear and practical instruction—that which I have just read, assuming that the width of the wick is provided for. It follows after some instructions which appear to be somewhat inconsistent with it and which make it appear as if it were desired that the lights should be screened to the inner edge of the lens and not of the wick. But I understand that in a properly-constructed side light, with the wick in its proper position, the two instructions would amount to practically the same thing, as may be seen by a reference to the diagram in the Board of Trade Instructions to Surveyors of 1892 and of 1894. A line parallel to the keel drawn to the inner edge of the wick is the same thing as a line to the inner edge of the lens; but unfortunately the lanterns are in many cases wrongly constructed, and in such cases the wick is the only safe object to screen to if any object in such case is safe to screen to.

1105. What is the result at which you arrived on this point?—Well, from what I have said, it appears that the Board of Trade experiments and inquiries into this subject, which led to the new order, were undertaken in consequence of the Washington Conference, and that but for the Conference recommending the excessive convergence which it did, the new order would not have gone so far as to require a degree of convergence now admitted by the Board to be a possible source of danger in narrow waters.

1106. You think that the effect of the Board of Trade being influenced by the Washington Conference led them not to take such counsel with their outdoor surveyors as they would otherwise have done?—Yes, I have that feeling very strongly. I think they were supported and led on by the Washington Conference, and they neglected to take that counsel with their outdoor surveyor's staff which might have saved them from the extremes into which they have fallen in this matter; and in this connexion I would refer to a departmental notice of November 1892, numbered 5, in which the following appears: "Numerous criticisms have been made by people "ignorant of the subject on the Board's recent "instructions as to the screening of side-lights, in "one case, I regret to say by one of our own officers, "who ought to have been better informed." I think that the effect of such an order must have been to stifle counsel, and to discourage the production of statistics not in accord with the action to which the Board of Trade had committed itself.

1107. (*Mr. Ismay.*) Have you got a copy of it?—I have not got a copy of it, but no doubt the Board of Trade can supply one.

1108. (*Chairman.*) Now, as to the electric light. Have you anything to say with regard to that?—Yes, I think with regard to electric side lights special experiments are needed. I think probably a less degree of convergence might be advisable with such lights of larger carrying power. It has been spoken of to me, and I have noticed it myself, that mail and passenger steamers whose passenger spaces are lighted by electricity appear at sea as large luminous objects. Oil lamps for masthead and side lights of such vessels are unsuitable. The light is too feeble, and becomes drowned by the luminosity of the electric light. The masthead and side lights of such vessels ought always to be lit by electricity.

1109–10. Do you regard as satisfactory what you took to be the intention of the Washington Conference, namely, a screening of something like $2\frac{3}{4}°$; that is to say, a quarter of a point?—If I may answer that question in my own way, the mode of screening laid down in the Instructions to Surveyors in 1875, which I have read with a certain approval, gives for paraffin or kerosine lamps having wicks 1 inch wide a convergence of $1\frac{1}{4}°$, and for colza oil lamps having wicks $1\frac{3}{4}$ inches wide a convergence of about 2°.

1111. I am not quite sure that I understand how it is that, in your view, screening to the inner side of the lens is the same thing as screening to the inner edge of the wick. I should have thought there would have been a considerable difference?—I think Mr. Corry, who has drawings, will make it clear. Meantime, I think I can explain my meaning by reference to the small diagrams in the Board of Trade Instructions to Surveyors.

(*Chairman.*) I quite understand. In the Instructions the two things look very much the same.

1112. (*The witness.*) Shall I hand this in?

(*Chairman.*) I think we have copies.

1113. (*Rear-Admiral Andoe.*) If the Regulations, as they were worded in 1875, which provided that the line drawn from the inner edge of the wick to the outer edge of the chock, and parallel to the keel, were complied with, do you consider they would be proper ones for the fixture of screens?—Well, I have disclaimed any pretence to have the technical knowledge to arrive at a final decision. But, as far as I know, that seems to me a very sensible and defensible screening under the Act, because it gives the full light ahead and abeam, and you cannot have that without screening in that way, as far as I know.

1114–5. I think you said that it is the same thing whether you measure from the inner edge of the lens,

or the inner edge of the wick?—Yes, with a properly constructed lamp.

1116. These lamps, as they are, vary in size, and consequently the wick may be at a greater distance from the screen in one lamp than another?—Yes.

1117. And, consequently, the angle at which the rays cross the bow varies according to the lamp?—Yes. I did add, in expressing such approval as I did express of this instruction of 1875, that I assumed the width of the wick was settled.

1118. The width of the wick was mentioned?—Yes, that must be settled otherwise, or, as you say, the convergence will vary.

1119. (*Mr. Ismay.*) What tonnage are the vessels of your association?—Of my company?

1120. No, the association that you represent. I thought you represented an association?—Yes, I do. I cannot tell you, it is very large.

1221. (*Mr. Scrutton.*) Millions?—Oh, yes.

1122. (*Mr. Ismay.*) I suppose they are chiefly ships of a larger class?—All sorts.

1123. Do you think that, as a matter of fact, the larger ships are screened to a finer angle than is the case in smaller ships?—That I cannot tell you. I should think in the case of larger ships more attention has been paid to the matter, and I should expect to find that there had been more uniformity, and probably they had been screened finer. If I may amplify a little, I should expect to find that the irregularities in screening have grown up of late with the new class of shipowners that have come in since the opening of the Suez Canal, and that probably before that time, when there was not so much shipping, and when shipowning was more of a profession the thing was better done. I gather that from what old pilots tell me.

1124. Possibly that would be because the shipowners had previously been shipmasters?—Very likely, and had looked after ships from father to son.

1125. Does your association lay great stress upon the fact that there should be an international agreement?—It does.

1126. Why, may I ask?—Because they fear that the owner of a British ship screened not in accordance with international agreement would lose his case if he went into a foreign court in the event of a collision.

1127. You have not heard of a case of the kind?—I do not recall any.

1128. What do you consider the chief causes of collision?—Uncertainty on the part of those in charge of the ship; that is to say, uncertainty as to the signals, and uncertainty as to how the other ship is going.

1129. May I take it that although there are regulations in the rivers for each ship to keep her own side, it is desirable that the lights should show quickly what she is doing?—It is.

1130. And I suppose you have been on frequent trips down Channel yourself?—Yes, I have been a good deal in the Channel.

1131. I think I have passed you in the Bay of Biscay in March?—Yes, in March. We exchanged night signals.

1132. You have more than an ordinary practical acquaintance?—I think so. I have been about the world a good deal by sea.

1133. You have written a very able paper upon this subject?—I am handing it in.

1134. (*Captain Thomson.*) I think you are in favour of screening from the inside of the wick parallel to the keel, are you not?—I have expressed approbation of that up to a certain point, without expressing the opinion that finer screening cannot be arrived at. I do not see how that can be arrived at while the Act continues as it is.

1135. In that case have you any idea what convergence that will give you, that is to say, what angle your most convergent ray will make with the line of the keel?—Yes, $1\frac{1}{4}°$ to 2°, according to the width of the wick.

1136. It is not uniform screening; it would not be uniform in that case, it would depend upon the wick?—To ensure uniformity the wick must be of a prescribed uniform width.

1137. Then in the case of the electric light, which, of course, is a more concentrated light, you would have finer screening than you would with a colza wick?—I rather think so with the electric light. I am not quite clear about that. I should like experiments tried. With the electric light you would have the light more in a point and less in a band.

1138. It is so undoubtedly, the incandescent lamp has a much smaller diameter?—Yes.

1139. You said the convergence was the principal point. You said also the 4° was too great an angle of convergence?—Yes.

1140. But 4° is from the outside of the wick?—Yes.

1141. And therefore that is supposed to be an outer limit of the converging rays?—Yes.

1142. Whereas, of course, the difference then is between 4° and 2° in the case of a colza oil wick? Is not that it?—Yes $1\frac{1}{4}°$ to 2°. With 1-inch you would have $1\frac{1}{4}°$ of convergence. I should like to see the 1-inch wick as the standard, so as to reduce the convergence.

1143. Can you tell me the candle-power of the electric lights in your ships?—I am afraid I cannot.*

1144. Have you considered this question with reference to the present rule of the road?—Yes.

1145. In the case of two ships meeting nearly end on at night time, supposing the outer rays were limited to 2° convergence, the ships steering opposite parallel courses would never come under the rule to port their helm at any time, unless they were within that angle of each other, which is a very small one, 2°?—Never.

1146. They would never come under the port helm rule; that would be a source of danger, would it not? It is rather a technical question I am afraid, but I think you have considered the subject?—No, I was taking time because I did not quite understand your point. Ships meeting end on?

1147. Nearly end on?—End on, or nearly end on. It all depends how near they are to being end on. If they are dead on they should pass red to red.

1148. Yes, that is not quite my point?—If I see a ship approaching me and she is on my starboard bow, and I see a bright masthead light, and her green light, I hold on my course, and pass green to green. I do not necessarily run into danger and cross her bows to get red to red, because we are perfectly safe. But if there is a great convergence, that vessel being still in the same position, a position of safety, she may see my red light, and then she unnecessarily runs into danger by crossing my bow to comply with the rule of the road, and if she does not comply with the rule of the road, she would be non-suited in the Court in case of an accident. She would be asked, why did you not comply with the rule immediately on seeing the signal while there was yet time. It would be no use of a master saying "I waited to see whether it was a mere squint of light." There is the rule, and he has got to comply with it, whatever happens.

1149. I think you are quite right, when you see both a ship's lights nearly ahead you are bound to port your helm, even if you see only a squint?—Yes.

1150. That this is for both lights?—Yes.

1151. Now, I want to draw your attention to the finer screening—the 2°. Then ships would never have to port their helm according to the rule of the road unless they made very fine angles with each other; 2° is a very small angle. It would practically limit porting to ships being right ahead of each other?—Yes.

1152. Mathematically ahead almost?—Yes.

1153. You understand that?—Yes. I imagine so, because if they do not see the red light they would not port. If they saw the green light and did not see the red light they would not port.

* Mr. Anderson subsequently informed the Committee that they were all of 32-candle power.

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1154. Then, whenever they were more that 2° from each other they would not port?—No.

1155. And yet against that we have been told the words "nearly ahead" have been held to include as much as a point. You see the source of danger in that?—I see a source of safety in it, not danger. I think, with fine screening, they know accurately each other's position. It is uniform screening, and they know exactly what the screening is. It is the same in every ship, and they use their discretion, edging off a little bit so as not to pass each other too closely, but not crossing each other's bows. I think the side lights were originally bow lights. They were very near each other, and carried on the forecastle in the fore part of the ship. Suppose they were back to back with a long screen between, would not that give perfect screening. You would see each light dead ahead and neither across. There is no dark lane in my judgment. You would not see a dark lane. The natural yaw of the ship forbids that and the refraction of the light. The side lights would then signal accurately and definitely what the ship was doing and what her course was, and that is their object.

1156. (*Captain Hallett.*) What makes you consider that there was a blunder at the Washington Conference, that they recommended half a point when they meant a quarter of a point?—The protocol of the proceedings shows it. You can trace the whole progress of the mistake. They were discussing this question of screening. Captain Mensing, of the German Navy, produced a French translation of what purported to be a rule of the Board of Trade on the subject; and in this rule it spoke of the angle formed by the rays crossing each other in front of the ship; that is to say, the subtending angle of the triangle. They were discussing that, and then they broke up for luncheon. When they came back they applied this angle to each side light, and the resolution to this effect was carried by a large majority. You can see the whole growth of the mistake till, finally, they recommended double what they intended to recommend.

1157. Before the Board of Trade issued these instructions, laying down the angle of screening absolutely to be 4° from the outside of the wick, do you happen to know what your own vessels were screened to?—No, but I know all our vessels were screened to a considerably finer angle than 4°, because in every case the chocks were cut down by order of the Board of Trade surveyors to comply with the new order.

1158. You are talking of the Orient line?—No, I am talking of the Orient Company. There are ships belonging to the Pacific Company also running in that line, but I cannot speak for them.

1159. (*Sir E. Harland.*) Chocks cut down here?—Yes, cut down.

1160. (*Captain Thomson.*) For the association that you represent, can you speak to that at all?—I cannot speak to that.

1161. (*Captain Castle.*) I suppose all the ships of your own company would be screened at the same angle, would they not?—That I cannot say, but I should expect to find it so because the overlooker would know——

1162. Only one superintendent?—One superintendent, but the screens were altered before I knew about it.

1163. You were speaking of, say, a green light nearly ahead, a little on the starboard bow, not necessarily to port. You say you have been to sea a great deal yourself, do you not think it would be better to starboard a bit to give a wide berth?—I think it would be better to edge off a little.

1164. That is, to starboard, and give it a wide berth?—Yes, and not cross the ship's bow.

1165. (*Mr. Bolam.*) Have you seen the list of ships in the paper* put in by Sir Digby Murray, belonging to the London district. He gave the angle of screening, previous to the new instructions, as on the average over 4°?—Yes.

1166. Have you counted how many of these vessels had the screening reduced, and how many had it increased?—No, I have not, but I got the figures from Sir Digby Murray. I have not counted them myself; Sir Digby Murray gave them to me, but I have not got them here.

1167. Is it your impression then that in the London district the number of ships having the angle increased is greater than the number of ships having the angle diminished?—From my recollection of Sir Digby Murray's figures, it was so.

1168. More ships had had the angle diminished?—I am not sure, I could not answer as to that.

1169. I should like to know whether the figures agree at all with this abstract I have made myself. I find, taking the London district, 34 of the vessels have had the angle reduced, and 54 have had the angle increased?—To greater convergence.

1170. Yes, and 12 per cent. practically untouched?—Yes.

1171. If these figures are accurate, it would show, as far as this list is concerned, the 4° angle in the larger number of vessels has been increased in the London district?—That a majority of vessels had been screened finer.

1172. Yes, had been screened finer before?—Yes, I take that from you. And then there is no doubt from the statistics—I do not altogether accept these statistics—I daresay they are perfectly honestly got and put forward, but I do not think we can rely on them absolutely. The case of the "Lusitania" has shown us one possibility of error creeping in, viz., that the same ship may be dealt with twice; and also, I think, that at first the surveyors did not know how to take the angles. I know of one case where we could see the lights upon the forecastle of the ship crossing inside the stem, and they could never have intended to do that, because it is contrary to their order. There is that element of doubt about the statistics, that I think these surveyors did not know exactly how to screen; they had certainly neglected it in the past, as if they did not understand it in the past.

1173. Between vessels meeting end on and passing each other and between vessels meeting end on and crossing each other, there will always be a limit, will there not, of necessity. There will always be a betwixt and between of meeting and crossing, will there not?—Yes.

1174. It is impossible to get over that?—Yes.

1175. There must be a limiting case between meeting and passing, and a limiting case between the meeting and crossing back?—Yes.

1176. In your opinion, will that difficulty ever be got over by any law of angling. A limiting case would exist whether you screen to 1°, 2°, 3°, or 4 points, for that matter?—The question about crossing? What I understand you are referring to is whether the vessels crossing ahead or astern——

1177. When the two vessels are a little end on, and crossing a little, there will always be the difficulty in deciding whether those vessels are meeting or crossing; there will always be a limiting case in which the officer will be in doubt?—You mean under the new order?

1178. No, I mean absolutely?—If he is in doubt he will be obliged to obey the rule.

1179. Therefore you will never do without the exercise of judgment and intelligence on the part of the officer whatever the rule of the road is?—Yes, but the less you have of doubt the better.

1180. Quite so. Then if you have a large area of screening you will increase it very much?—Yes, you will increase the region of doubt.

1181. During the period from the ship showing both her side lights until she sees one there will be the period of doubt?—Yes.

1182. And at any rate it would be desirable that that should be as short as possible?—Yes.

1183. (*Mr. Scrutton.*) You have given a good deal of attention to this matter?—Yes.

* See Appendix 2, No. 7.

1184. And I have no doubt you have received from other shipowners and others information upon the subject?—I have.

1185-6. That being so, could you give us any cases in which you feel there has been danger in consequence of the regulations?—Yes. I could give you an actual case.

1187. Will you kindly do so?—A steamer belonging to one of the Australian mail and passenger lines was bound down the river, in some of the channels at the mouth of the river, and there was a vessel meeting her on her starboard bow. They saw her masthead light and her green light, and the pilot in charge of the Australian steamer held on his course intending to pass starboard to starboard, keeping this ship on his starboard side, and as he approached the ship there was another ship appeared in the distance, meeting him dead end on. Well, it was necessary for him to comply with the rule of the road towards that other steamer that was end on, and to port his helm. He knew that the side lights had been changed under the new order, and was alive to the risk of showing his red light to the vessel which he was going to pass green to green. He said to the quartermaster, "Now, be careful, I think four or at most five degrees will do all that is wanted." The quartermaster did it very carefully, but the vessel on his starboard bow got a glimpse of his port light, and immediately ported her helm, and swung right across his bows, to the danger of collision. The pilot that was in charge of the Australian steamer attributed it entirely to this change in the screening. I consider that a very good illustration of the danger of large convergence in narrow waters.

1188. (*Captain Castle.*) What part of the river is that?—Well, you will have Mr. Posgate here, and he will tell you that. His brother was the pilot in charge. I really did not intend to take this story out of his mouth, and he will tell you exactly where it happened.

1189. (*Captain Thomson.*) They were both the wrong side of the river, were they not?—I do not know exactly. Mr. Posgate knows all the circumstances, and I will tell him to get that information. I will give you another instance, if you will allow me. It occurred on the 29th March with the British steamer "Brinkburn," bound out from Toulon to Madagascar with war supplies for the French, and she had just entered the Straits of Messina from the north, at least she was near that end. She was at the part where the ancient whirlpool of Charybdis is, which causes ships to yaw about a great deal, and she had seen a steamer for some time approaching her, coming from the south on her starboard bow. The "Brinkburn" was holding on her own course, to pass this approaching steamer green to green, the "Alva" was her name; she was under the Sicilian coast, and the "Brinkburn" was towards the Calabrian coast, and this eddy of Charybdis caused the "Brinkburn" to yaw to the starboard. She did not yaw so far as to be end on to the other vessel, but so far as to be nearly end on. It did not occur to her that she had shown her red light, and she went back to her starboard helm again, flew back to it suddenly, as suddenly as she had gone, but she had shown a glint of her red light, enough to bring the "Alva" upon her, and the "Alva" herself sunk. I consider that was a loss probably caused by this considerable convergence. I think there is no doubt about the facts of this case. It was investigated at Malta, and I have read the whole account and the report of the evidence. The story is confirmed by the French officers who were on board, who had their binoculars and saw it all.

1190. (*Chairman.*) What report was that?—The report of the inquiry.

1191. Held by whom?—A magistrate, with two assessors—ship-masters.

1192. I only ask you because, perhaps, we might be able to get that report?—I could get that report, I have no doubt, from the owner of the "Brinkburn," who lent it to me.

1193. I daresay the Board of Trade will be able to get it for us?—It is the "Alva" and "Brinkburn."*

1194. (*Rear-Admiral Andoe.*) I would ask you a question on that point, as I know these waters. Are you aware that a ship is sometimes completely out of control in Charybdis in the Straits of Messina?—I can quite believe it.

1195. Absolutely out of control. You will see a ship swing round eight points and back again?—I can quite believe it; I have seen a ship swing round. I would observe that in this case the ship was swayed by the eddy so as to be brought nearly, but not quite, end on to the other steamer.

1196. I merely mention that as showing it is not a particularly valuable instance, on account of that ship probably not being under control at all?—Well, its value, of course, would depend upon the credit that is given to the statement that she was nearly, but not quite, end on to the other ship; because, if she was only nearly end on, then the argument from this case is in favour of fine convergence.

1197. (*Chairman.*) You say, the finer vessels are screened, the less chance there is for such an accident to happen?—Yes.

1198. (*Sir E. Harland.*) Before this excitement outside upon this Order in Council, did you or did any of your friends, or your marine inspectors, know anything precisely as to the way your ships had been screened up to that time?—I am afraid not. I am afraid they relied a good deal upon the Board of Trade surveyors, but they must have attended to it themselves also, because, as I say, in every case the chocks had to be pared down; so the lights must have been more finely screened before.

1199. You refer in every case to your own vessels?—Yes, to our own vessels.

1200. That is to say, in no instance in your vessels had there been one that had been screened to more than 4°?—In no case had there been one screened to as much as 4°.

1200*a*. To as much even?—Yes.

1201. Then you cannot speak of vessels in your own service as to any objection that there had been to the screening before that?—No.

1202. Then, consequently, you are surmising, or your officers are surmising, that when screened as now to 4°, it is dangerous?—No, I do not think we are merely surmising. Captain Ruthven, who is our senior commander, has paid a great deal of attention to the subject, and has made experiments with his own ship and with other ships. He has written papers on the subject in the "Nautical Magazine"; he is to appear here as a witness, and I think he will be able to put the matter beyond surmise.

1203. You have read some of the returns† made by the Board of Trade officials as to vessels in the London district; have you any reason to doubt that return which shows 5°, 6°, 7°, or 8°, being correct?—I think I said something about that before. I would not put too much reliance upon their accuracy, but I think they are substantially accurate; at all events, they show quite enough to establish that things were in a very bad state; that there was a great want of uniformity, and all sorts of divergences and convergences, and all sorts of irregularity; it must have accounted for a great number of collisions, and for a great deal of what has been considered false swearing in actions in the courts.

1204. Now, there is a class of pilots who take every class of ships into port; have you heard that they have every complained of this order?—Yes, I hand in a protest‡ signed by the whole of the Trinity House pilots, I think, of London.

1205. And do you think that they have not been aware that the screening in some cases used to be

* *See* Appendix 5, No. 3.
† *See* Appendix 2, Nos. 2 and 7.
‡ *See* Appendix 6, No 2.

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much wider?—What they have said to me is that the screening used to be finer when they were young pilots than it has been of recent years. I have pressed them to say whether it was since 1893 that the screening became coarser, and they have replied, "No, it was before that that it got bad."

1206. Would not that bring us to a period when there were literally no chocks whatever on the ends of screens?—I think it brings us to the state of matters which is disclosed by these statistics. The thing was not being attended to, and collisions must of necessity attend such a condition of things.

1207. Have you recognised that there was a time when there were no chocks on the end of the screens. Does not that point to the lamps having been screened then to a very much coarser angle?—Well, they have some ways of making screens so that you can dispense with the chock, and still get the effect.

1208. Is not that rather a modern plan of making the screen in two—having the screen double?—Yes.

1209. But do you think that was in use at all, or in practice 20 years ago?—Well, that I do not know. I have not gone back. I believe the whole use of side lights is comparatively a modern thing.

1210. You referred to a very old practice of having the lights really on the bow, almost side by side to each other?—Yes.

1211. Have you any historical knowledge that it was once the practice of the Navy, for instance?—No, I have not.

1212. Then you refer to it as having been in practice at some time or other?—Yes, I was aware it had been.

1213. And you also referred to it as not having been a bad plan?—Yes, in many ways.

1214. If it were adopted again?—Yes.

1215. But in that case did you think of the impossibility of carrying the lights at the bow, or did you look to the danger of the screens being carried away from the bow of the ship?—Yes, I do not advocate it at all. I do not advocate the placing of the lights on the bow for many reasons—that is one—the risk of their being carried away, and the risk of their being obscured by spray, and so on, and because they are away from under the eye of the officer on the bridge. I like them to be on the bridge.

1216. That is why I gave you the opportunity of qualifying that statement?—Yes, I did not mean that to be taken literally.

1217. Have any of the lights in your line of steamers duplex burners, such, for instance, as you have in your own house, possibly, for oil lamps?—No, I do not think so. I think they are two wicks.

1218. Merely one wick?—Two wicks.

1219. That is what I mean?—I think that all, with the exception of the vessels lighted by electricity, have two wicks.

1220. You are not aware that you are in the habit of using that class of light?—I think we are using mostly electric light now—I think so

1221. Take the electric light. You have been referring to the angle of screening being taken from the inner edge of the wick?—Yes, I recommend that.

1222. The line from the inner edge of the wick being practically parallel to the line of the keel?—Yes.

1223. And there would be sufficient light from the width of the wick?—Yes. Would you allow me to add that what I meant to say was that that is a practical and intelligible order to surveyors, because it gives the full light of the lamp ahead of the lamp to a line parallel to the ship's keel, as required by the Act of Parliament; but not beyond that line.

1224. Putting the Act of Parliament upon one side—would you recommend screening from the inner edge of the wick?—Well, that is why I should like experiments conducted, not from a foregone conclusion, as was the case, it seems to me, with Sir Digby Murray and Mr. Samson's experiments at Shoeburyness. It appears to me they got 25*l.* to make experiments of a definite kind, but they went and spent it in doing something else—they went with a foregone conclusion as to what was desirable, and then proceeded to make the experiments. I cannot see that they ever tried to see whether 2° of convergence would do. They went with the foregone conclusion that it was to be 4°. I should like to see the experiment tried. I am satisfied the finer the angle can be made and the less you see the light across the bows the better. At the same time, you require to see sufficient light ahead of the lamp itself. I should like to see experiments made, as I say, not with a foregone conclusion starting with 4°, or any other number of degrees, but beginning with one and going through the whole gamut, and seeing what is the finest you can get.

1225. What angle would you recommend from the centre of the electric light?—I have not conducted any experiments. The electric light is very much stronger than the oil light. Those rays that escape from the outside edge of the wick do not penetrate very far, and instead of that region of doubt being a triangle, it is more a parallelogram.

1226. That is from the electric light?—No, from the oil light—from its convergent rays dying out. But with the electric light, the penetration of what did escape from the chock across the line of the ship's keel would carry the crossing rays very much further. I think special experiments ought to be made with the electric light.

1227. You would anticipate that for the electric light the chock should be thicker—that the angle should be made finer?—I think that the greater penetrating power of the electric light would carry the region of doubt perhaps three miles away from the ship. That is what I should expect to find.

1228. (*Chairman.*) There was one question with respect to the statement as to the conclusion to be drawn from the protocol of the proceedings at the Washington Conference. Captain Mensing* is reported to have said:—"There is very little more "to be said, except to explain how we came to "adopt the angle of half a point. As far as I know "there are only two countries in which the rule "where the lights should cross each other before the "bow is accepted. One is Denmark, in which "country the distance is settled to be about a cable's "length, which would be 185 metres, so the angle "would be much less than the one which we propose "now; and the other country is Great Britain. "There is a table here from which I get the French "translation, in which it says that, for the beam of "a ship 20 feet broad, the shortest distance at which "these rays should cross each other is about 200 feet; "that is to say, the rule laid down by the Board of "Trade comes practically to this, that, at the distance "of 10 beams, or ten times the breadth of the beam, "there should be a distance before which these rays "of the side lights should not cross. That makes a "half a point." I presume it was some passage like that which you had in your mind?—Yes, I could hand you in a statement showing how that point has been worked out; but Captain Ruthven, the gentleman who pointed out that blunder of the Washington Conference, is to appear before you as a witness, and you will have an opportunity of asking him to explain it.

1229. (*Captain Hallett.*) Are all your lights of one pattern?—I think so.

1230. Because it makes a great deal of difference whether your wick stands *that* way, or whether it stands *this* way?—Whether it stands at right angles to the line of the keel, or an angle of 45°.

1231. And some even stand more?—And some are not in the centre of the circle.

1232. And some of them are in the same circle?—Yes.

* *See* Parliamentary Paper, C. 6255, p. 189.

Mr. JOHN CORRY called and examined. *Mr. J. Corry.*

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1233–4. (*Chairman.*) I think you are a shipowner?—Yes, of long standing.

1235. And managing owner of Messrs. James P. Corry and Co.?—Yes.

1236. And you have had considerable experience in shipping matters?—For upwards of 40 years.

1237. Have you considered the question of side lights?—Yes, I have.

1238. I think you have given attention to the subject of the proper screening of side lights, and also the best method of fitting side lights to large sailing ships and steamers?—Yes, I have given considerable attention to both.

1239. What, in your opinion, was the cause of want of uniformity in the angle of screening? I think the main cause of the divergence has been the improper placing of the light. I think I could better illustrate what I mean by showing you this diagram of an ordinary side light. This side light is of ordinary construction, and is about as small as the regulation would admit a light to be made. According to my judgment, the proper position for the light is in the centre of the lamp, in the focus of the lens. This lens in the ordinary case is made one-third of a circle—120°. That is for convenience in construction. I may just state that those who go in for perfect lenses make them of a somewhat larger arc; but I am now taking what is simply an ordinary side light used in the mercantile marine. The proper position, to my mind, for that light is in the centre of that lens, and that would allow the whole width of the wick, or more correctly the width of the flame of the wick, to show right ahead; and the proper screening for that light would be a line drawn from the inner edge of the lens parallel to the keel.

1240. From the inner edge of the lens?—Yes. You have then, of course, the light of the flame itself converging; the whole of that light is shown right ahead, and to my mind anything more than that is quite unnecessary—in fact, misleading. But you ask the question how is it that there has been such great discrepancy in the screening? It is simply because the light has not been maintained in its proper position. You will find side lights in which it is very improperly placed. You will find the light *there* or *here*, or *there*. (*Describing on the diagram.*) In fact, everywhere except in the right place; and, of course, if you shift the light one way, you get one screening, and if you shift it another you get a very different screening. Under the old Board of Trade regulations the practice until very recently was that the inner edge of the lens should be the point of guidance in screening, that is to say, a line parallel to the keel projected from the inner edge of the lens. If the light—that is, the lamp—was in its proper position, that was a perfectly correct basis to work upon; but if the light was not in its proper place, of course it was misleading. I just refer to this, because it has been stated that this direction of the Board of Trade was a misdirection and was not intended. I know that was not the case, because I practically for the last 30 years have superintended the fitting of these lights, and know what has been the practice in all parts of the kingdom; and I maintain that if the light was in its proper position in the lamp, it was a proper and correct method of adjusting the screening. If the whole of the light is seen right ahead, the international rule requiring the lights to show to two points abaft the beam cannot be absolutely carried out, because the lens would require to be extended about half-an-inch to do so. But this is not, in fact, a matter of very great importance. The important matter is that the light should be seen right ahead. I hold, and in that respect I am borne out by the shipmasters and pilots that I have spoken to, that any greater divergence than I have indicated would be misleading, especially in narrow waters. I think that uniformity should be obtained, but it should be the best possible practice which should be adopted. I hold that if the lamp is screened so that the whole of the wick or the whole of the light shows right ahead, it complies with the international regulations and meets practical requirements. Here are other drawings, which I can exhibit, of larger lamps. (*Another drawing was shown.*)

1241. (*Mr. Bolam.*) Would you say whether this is a diagram of an actual lamp?—From a section of an actual lamp. I drew it from an actual common lamp, but a lamp I considered correct as regards its general arrangements. They never measure absolutely the whole 120°, because there is a certain amount lost in the cutting of the lens. In this case it is only about the eighth of a degree. Here is another system of fitting which I advocate personally, This is a section of a lighthouse about 3 feet in diameter; and in this, instead of inserting, as usual, pieces of glass and the lamp swinging inside, I advocated fixing the lens into the lighthouse in a brass casting; in fact, making the lighthouse an integral part of the lamp, and having this swinging lamp inside. The advantage of that is, it adapts itself to the roll of the ship, and the light remains vertical. The centre of motion is the centre of the flame. The object of this is to preserve the chimney, because, with these duplex burners, except the flame is kept vertical, the chimney is sure to crack; with this arrangement they do not crack, even in the worst weather. In fact, I have cases in which the same chimney has been two or three voyages without cracking. Here is another diagram. That practically shows another view. That is the vertical height of the lens, and the centre of the lens, you see, coincides with the flame. This is introduced in a lamp inside the lighthouse, and forms an integral part of it. The advantage, as I consider, is that you have not the two thicknesses of glass for the light to pass through, and also that you can more accurately fix the screening.

1242. (*Sir E. Harland.*) Is this for the pitching or rolling?—The rolling, mainly.

1243. (*Chairman.*) Does not the pitching throw the light down?—No, the pitching in a long vessel has very little effect.

1244–6. Not enough to throw the flame on to the glass?—No. This system to a certain extent obviates the effects of both pitching and rolling. In going round the Horn in the wildest weather we have no trouble. We never have to trim the lamp for 16 hours. You can make the lamp as large as you like, and for the time it is burning it requires no attention. Of course, being in the lighthouse it can be looked at. This door opens, and the reflector is fastened to the door, so that when you open the door you see that the lamp is burning properly, and when the door is shut the reflector is in its place.

1247. (*Rear-Admiral Andoe.*) Could it be adapted to an ordinary lamp?—No, it would be rather cumbersome. You want something like a lighthouse to carry it in.

1248–50. (*Captain Castle.*) You are not speaking of sailing ships going round the Horn?—No. I have fitted it in sailing ships, but they are of a large size; but in a small lighthouse I have not.

1251. (*Chairman.*) The last witness, Mr. Anderson, told us that the edge of the wick and the edge of the lens, in his view, would practically mean the same thing?—Yes, if the lamp is properly constructed, as shown in the diagram I have here.

1252. In this case it is the same?—Yes, and it would always be the same if the lamp were properly constructed. The edge of the lens and the inner edge of the wick or flame practically coincide; the flame would be somewhat larger or wider than the wick.

1253–7. If the two things mean the same, one can understand how in the Board of Trade regulations one phrase might be used which practically is identical with the other?—I have no doubt whatever when the

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regulation was first got out that with a diagram like this, and with the lamps that were then in use, the two phrases were identical. They took the lens because it is much easier to measure from the lens than the wick; but when measuring from the lens they ignored the necessity of seeing that the wick was in its proper position.

1258. (*Chairman.*) I should like to put to you two things which have been urged by the Board of Trade surveyors. Supposing the screening was exactly as you have shown it was in theory, there is the long dark space corresponding between the distance between the lights; do you think there is any objection likely to arise from that?—None whatever. You see even in *this*, or in any light, there is a convergence of the width of that flame, which is about an inch and a quarter, in 3 feet. If you go 400 to 500 feet ahead of the lights, you would begin to see both lights. I hold it would practically be an advantage in narrow water if you would not see them, because you would know exactly what side of the vessel you were on.

1259. You agree that it is important that ahead of the ship or ahead of the light (whichever you take the words to mean) there should be a uniform strong light?—The whole width of the light should be shown right ahead.

1260. Now I do not know if you are aware that according to the experiments of the Board of Trade, lights so screened can be hardly said to show quite their full strength right ahead of the lamp. I do not know if you have seen those experiments?—I have not seen them, and I do not credit it.

1261. However, you think in practice that if the light is so screened, as it certainly should be in theory, it would show an unbroken and uniform light right ahead?—I have no doubt it would; in fact, I have tested it in our own vessels, the length of a ship ahead, and as far as my eye could judge, there was absolutely full light. When I went a little to the one side, I could not notice any difference in the volume of light, and, of course, right ahead we saw the whole light.

1262. Now the other point that is pressed a great deal by the Board of Trade, as I understand it, is the necessity of keeping to the full meaning of the rule, "green to green, red to red, perfect safety, go ahead," Now it is suggested, as I understand, by the Board of Trade, that if the lights are screened to a small angle, that that rule ceases to be a rule of practical safety. I do not know if you fully follow exactly how the matter is put?—No, my reading of it would be, if you screen to a large angle you get into a mess at once.

1263. Put it in this way, supposing one vessel is a little on the starboard bow of the other, now in that case if the lights are screened very fine, in theory at any rate, the vessels might approach each other on absolutely parallel courses green to green, and yet there might be a collision?—It would be very difficult for anything of the kind to occur. I do not see any necessity for it, because you have the whole volume of the light. The man knows he must not shave too close. You must give a certain amount of space for clearance, and no one would come absolutely close. You know even the side light is not placed in the extreme width of the vessel. I think such navigation would be utterly reckless. It would be a blunder.

1264. You would say a man ought to keep his eye on the light, and if he found it was not altering he should give a touch to his helm and keep a wide berth?—Yes.

1265. So that, supposing the lights were screened finer, you would not anticipate any danger occurring?—No.

1266. (*Captain Thomson.*) Although the ships would both practically be breaking the rule of the road?—The rule of the road must be taken in a wide sense; "green to green" is simply a rhyme—the rule of the road rhymes may have been devised to simplify the rule of the road; the true rule of the road is to keep clear of one another.

1267. (*Chairman.*) What Sir Digby Murray says is, if you get the vessels in that position so that they advance on parallel courses they would strike one another?—Yes.

1268. And they would be green to green in the sense that neither vessel would see the red light of the other, but each would see the green. Under those circumstances Sir Digby Murray says it is a position of danger, because if they both go on there will be a collision, and at the same time there is no rule to govern this case; therefore, he says that the lights ought never to be screened so fine as to give that condition?—Green to green is simply a rhyme. It is no rule of the road. The main rule of the road is to keep clear, and those orders are merely indications of what is considered a safe line to go. The main rule of the road is to keep clear.

1269. (*Mr. Bolam.*) Is that case not sufficiently met by the general direction in the regulations, which says that nothing in the regulations is to excuse an officer from neglecting any precaution usual among seamen?—Of course that overrides anything of this sort.

This further diagram indicates a section of one of Harvie's lenses, the maker in Glasgow, who is considered to be the best maker of lenses, and it is rather in excess—about $\frac{3}{4}$ of an inch in excess—of the 120°.

1270. (*Sir E. Harland.*) Is the film of the red glass part and parcel of the red lenses?—No, it is on a separate thin piece of glass in contact with them. It is simply a surface colour, not carried through the thickness of the glass.

1271. (*Mr. Bolam.*) There is a little just cut off here by this part?—It is infinitesimal—it is practically nothing.

1272. I think this was to give the full measure of light ahead which Harvie's lamps do give—those of the later construction?—Yes, we have bevelled this so that as little of the lens as possible is observed. This opening is for replacing the lens in case it breaks; but in eight years we have not broken one, and that has been round the Horn, so that practically it is as safe as it can be.

1273. (*Sir E. Harland.*) That little bit here is to make it correct?—Yes, the lens is, perhaps, 130°, or rather more.

1274. Is this full two points here?—That is, practically, two points. He has tried to conform as near as possible with the regulations. These lenses, of course, are expensive, and would cost more than an ordinary side light. They are all polished and ground; but, of course, the first cost is a small item in the price of a ship.

1275–6. (*Captain Hallett.*) In the first lamp you have shown us, have you found any difficulty with the dirt on the corner of the lens?—Well, they must keep them clean—it is a simple matter to do, but if a fellow is painting his light-house, and he makes a smear of paint along it, of course, it would interfere with its efficiency.

1277. (*Captain Thomson.*) Would you ordinarily expect to find no dirt?—You can let a window get dirty, of course. Any ordinary window will get dirty, but you can keep it clean.

1278. (*Rear-Admiral Andoe.*) In the Board of Trade Regulations of 1875 it distinctly said that the line drawn from the inner edge of the wick to the outer edge of the chock was to be parallel with the line of the keel?—Yes.

1279. In the later instructions the inner edge of the lens only was mentioned?—Yes.

1280. Well, that altered the condition of things entirely, because if the lens were made less than a third of the circle it might be very misleading?—But, excuse me for one moment, they do limit it. That is one point that the Board of Trade do pay attention to. They did measure the size of the lens.

1281. But many of the lenses are now, I believe, rather larger than that lens?—I do not object to that.

1282. And overlap considerably on the inner side?—This is the largest lens made for any purpose that I know of.

1283. I think we had others before us larger than that?—I am not sure. This is Harvie's lens, which fits his largest lamp; others are made specially, but not, I should think, for trade purposes. In the case of this other diagram on the table, if the light were screened from the inner edge of the lens, the rays of the light would cross at a very considerable angle. But you see that light is placed absolutely in the wrong place.

1284–6. But then, in practice, is it not often the case that the light is in the wrong place?—I have said that that is so.

1287. Would it not be safer to ignore the rays and to measure always from the wick?—Certainly, I advocate measuring from the wick, but what I wanted to point out was that the old instruction, which was taken from lamps properly designed, was not an improper direction, because when lamps were first made they were made on an uniform pattern. There is no question about that. There was some attention paid to the construction of the lamp as regards the design, but the repairing of the lamps now has got into the hands of every tin-smith in the country, and he places the lamp or wick according to his fancy, and the result is that it is put two inches out of its place.

1288. (*Rear-Admiral Andoe.*) In practice, we know seamen are to a certain extent careless, and not particularly overlooked, and consequently, perhaps, the lens has a quarter of an inch of dirt and grease upon it; would it not be much safer if, say, you had an inch to spare in that lens, so that there would be no interruption of the rays, especially right ahead. That is the most important point, perhaps, as viewed by seamen?—You would require your screening to be very correct indeed.

1289. And you would require your lens to be very clear?—It is quite possible to carry out your idea, and you have a full lens if you like, and screen it properly. It depends upon the screening. To avoid any dirt lodging there, you had better give it a little more than the 120°; but, with the lamps designed and made at present, 120° has been selected, because you get three lenses out of one circle.

1290. If you were to cut off a quarter of an inch to allow for dirt and obscurity, you would not get the whole of the light right ahead; it would obscure a very important part of it?—You cut off that quarter of an inch, of course; that is all you do cut off.

1291. Then take the line from *there;* it would bring the line out in that direction?—You would lose that quarter of an inch, but that, as I say, is like dirty windows, and you have no business to have them dirty.

1292. In practice, however, I am afraid that is the case?—Well, I have not found it so in our own practice.

1293–4. Is there any other reason why the lens should not be made larger?—None whatever, it is only a matter of expense. When once you make a lens anything in excess of the 120° it adds one-third to the cost of each lens.

1295. I see you admit that all lenses made on that principle are really short of what they should be?—Somewhat, but I cannot say it is of very much moment, because it simply takes a small fraction from the two points abatt the beam, which I do not consider of any practical importance.

1296. (*Rear Admiral Andoe.*) Theoretically, it does not quite comply with the instructions?—Theoretically it does not; this other lens does.

1297–300. (*Captain Hallett.*) Do you put that wick at any fixed angle with the fore and aft line?—I think that is considered an important matter by the Board of Trade, but I put it through the centre.

1301. What is the angle between the two—the one drawn on the edge of the wick, and the one from this edge of the wick passing the edge of the screen?—It would be about one and a quarter inches on three feet, it would be about half what the Board of Trade at present requires.

1302. That is the whole width of the wick?—Yes, one and three-quarter inches.

1303. That would give you athwart ship a length of about one and a quarter?—About an inch and a quarter full. But I may say that this is drawn to the old colza wick—the original wick—that is out of date practically. I do not suppose there is one colza lamp fitted in a hundred. It is simply for the purpose of the Board of Trade Regulations; the inch paraffin will practically give the same width of flame. It is more like a gas flame, swelling out. This duplex burner would give about one and a half inches.

1304. Screening as you do from the inner edge of the wick to the inner edge of the lens, and so right ahead, does not that plan give a very much larger range for lamps that do not conform to that pattern. I mean with the screen he would put it would come out here at an angle of anything, if you screen from the inner edge?—It will not make very much difference whether I put that wick absolutely so. The flame will not be very much different. It is like everything else. In the construction of lamps there is a right and a wrong way, and I have considered, and do consider, that to place it in *that* way is the proper position.

1305. It gives a maker who is not careful to make his lamps the idea that by bringing the wicks out he may accomplish what is required as to screening?—If you do not put the wicks in their proper place, simply turning the wick round will not do.

1306. If they are triplex instead of duplex this would be practically a circular light?—Yes. Well that is practically a circular light. We treat them as circular lights and give an inch and a half practically; it is a duplex light; if you look at it it is practically a circular light.

1307–8. Have you any experience of the electric light?—No, not practically; although my knowledge of electric light is not great, I have no objection whatever to put it in, only in a fog I prefer a duplex burner.

1309. You have never tested it?—No, but I would advocate the use of electric light where you had it in a ship, although for fog I would always rather have a good oil burner; it is very much more effective in fog.

1310. The use of electric light increases your range to such an extent as to increase your width of field?—But I do not see any objection to seeing seven miles off if you can.

1311. You widen your field there and it widens your danger there. I only want to know whether you have tested it?—No, I have not tested it, but in the ships fitted with electric lights, passenger ships lit up with the electric light, I think the glare of these lights takes away from the absolute light of the side light.

1312. I know you cannot see them so well?—It is important they should be seen.

1313. A ship, an American liner, is such a blaze of light, that you cannot tell whether it has lights or not?—Well, but you see other lights as well.

1314. (*Captain Thomson.*) I think you said colza oil is practically out of date?—Practically.

1315. Is it not still used in lamps to a great extent?—I think we kept to it as long as anyone, but we have given it up many years; we consider the paraffin infinitely superior. We carry colza in case of accident. We have a colza lamp, but never use it. We have colza lamps fitted as well as the duplex burners; we have never used the colza lamps.

1316–20. Are not all the better class of side lights fitted with a second set of colza lamps?—I cannot say. I must just mention that has been one cause of a great deal of improper fitting. The first lamps that were used were colza, and then, when they introduced paraffin, they put the paraffin burner on to the top of the colza lamp, and that raised the light perhaps an inch and a-half.

1321. (*Mr. Bolam.*) You have screened by this diagram from the inside of the wick?—Yes.

1322. That is in order to control the full value of the light?—Yes.

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1323. Do you think it is of greater importance to control the full value of the light, or to control the reduced rays?—I do not understand.

1324. If you screen from the inside you then control the direction in which the whole beam shall go; but you leave the outer edge to cast at various angles, depending upon the amount at which the wick goes out?—You cannot avoid that.

1325. You must either control the inside or the outside?—Yes.

1326–8. Do you think it more important to screen from the inside, or screen from the outside, or do you think it better to have control of the whole beam, leaving the outside rays to take care of themselves?—You cannot screen except from the inner edge of the wick, or the inner edge of the light, wherever it is.

1329. The regulation gives instructions about the uniform and unbroken light showing over a certain number of points, and say nothing whatever about the rays which may cross from the outside of the wick—the regulation speaks about the uniform and unbroken light; now, to comply with the regulations, is it better to screen from the inside which enables you to turn the whole beam any way you like, or to screen from the outside which makes the full force of light turn at various angles?—I think in many respects the inner point is the correct one.

1330. If you were drawing the instructions you would rather instruct the surveyors to screen from the inside than the outside?—But I would have to see that the lamp was properly designed. They are points to be considered.

1331. In other words, you would rather give instructions to screen from the inside than from the outside? Yes.

1332. (*The Chairman.*) If you screen 2½° from the inside with a 1-inch wick it is about equal to screening 4° from the outside?—Yes.

1333–4. Then does it really practically matter whether you screen from the inside or the outside?—If the screen is in a line parallel to *that* it would make no difference, but if you cut it off the lens, then you will have to screen more.

1335. Does it very much matter whether you regulate by the inner edge of the wick or the outer edge of the wick?—No, not if you determine the convergence.

1336–9. (*Mr. Scrutton.*) I want to get one matter right. It will be remembered Sir Digby Murray, in answer to question 99, says,—"The wick is "sometimes at right angles with the keel, and it is "a question whether it is better to have it parallel "to the chord of the arc or not. I have not made up "my mind, but I know that my colleague, Mr. Samson, "who has assisted me, is very strongly of opinion "that the wick ought always to be at right angles to "the keel?" I should be sorry for Mr. Corry to go away without giving us his opinion on this point?—At right angles to the keel, I know, has been advocated.

1340. You adhere distinctly to that position?—Yes, because it is a correct view.

1341–4. (*Sir Edward Harland.*) Would you recommend that the centre of the light, or the wick, or the centre of the lamp, should be dealt with, and instructions be given to deal with the centre of the light rather than the side of the wick, not only in the making of a lamp, but also in screening the light; that they should simply deal with the centre of the wick rather than with one side or the other?—I do not think, practically, it would matter at all. Theoretically, of course, the centre of the lamp is the centre point of convergence or divergence, and it is a measurable quantity, perhaps more accurately measureable than the edge of the wick. I think, as a practical instruction, as it were, if you say that the chock shall be ⅝ths or ¾ from the centre of the wick, the instruction would be as full as necessary.

1345. (*Sir Edward Harland.*) And also in the matter of lamp making?—You could do that as well.

1346. This lamp appears to be a circular one, but in many cases the lamp is a square one, and if the lamp maker were told that the centre of the wicks must be in the centre of the lens, do you think that that would be a means of making the lamps more accurate?—I do not think there need be any difficulty if the proper points were given out, and proper diagrams were made, showing where the lights should be, but I would not confine them to one pattern, because some might prefer a round lamp to a square one.

1347. Supposing the screen had been originally fitted for colza or American oil, from the centre, and then the electric light were introduced, still the same screening would be correct?—Yes.

1348. You have evidently in these drawings been alive to all that?—Yes.

1349. Are you able to say whether the duplex is adopted by most of the owners of large ships?—I would not absolutely say, because this is a special thing of my own, and I designed it for our own ships. I should fancy it is not uncommon to use the duplex burners in large lamps, but except there is some special design to dispense with chimneys, I think they would find a little difficulty.

1350. (*Chairman.*) How would the swinging of your lamp affect the angle of the screening?—Not at all. You see the centre of the light remains absolutely stationary—the light remains stationary—the lamp swings, but the light practically remains in the centre.

1351. (*Rear-Admiral Andoe.*) It is so near the point of screening?—The centre coincides with the centre of the flame, so that, theoretically, it would have to swing to a very great angle. The point must be concentric with the flame, that is the object of this piece, and if you want to fix this lamp, you have simply to screw *this* in.

1352. (*Sir E. Harland.*) Is that a special design made for your own ships?—Yes.

1353. And you are not aware of any being made for any other ships?—No.

Mr. Thomas Scrutton called and examined.

*Mr. T. Scrutton.*

1354. (*Chairman.*) I want to ask you one question, Mr Scrutton. I think you have been kind enough to make a note of what is your practical experience with regard to lamps?—I have. Lamps for the Merchant Service are now almost universally made to burn paraffin with a 1-inch wick and chimney. When a stronger light is wanted, two wicks, each 1-inch, are fitted to the lamp. A wick to burn colza is often supplied in case Government stores are taken. The wick is then 1¾ inches. Or two wicks each 1-inch, as you will see on this diagram. [*A diagram was put in.*] There is a sample lamp with both kinds of wicks placed on the table.

## Wednesday, 8th May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Captain HALLETT.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

Mr. WM. HY. COLQUITT called and examined.

*Mr. W. H. Colquitt.*

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1355. (*Chairman.*) I believe you are a first class Liverpool pilot, and Vice-President of the United Kingdom Pilots' Association?—Yes.

1356. I understand that you have been appointed to give evidence before us as to the views of the Liverpool licensed pilots with reference to the screening of side lights?—Yes.

1357. How long have you been a licensed pilot?—22 years.

1358. How long have you had a first class certificate?—For the last 17 years.

1359. How many licensed pilots are there for the district of the port of Liverpool?—About 220, varying daily.

1360. What is the view held by the Liverpool pilots as to the manner in which side lights should be screened?—We say this, that there should be absolute uniformity, international uniformity, and secondly that the angle of screening should be reduced to the lowest possible minimum, and we submit for the consideration of your Committee that 2°, in our opinion, is quite sufficient for all practical purposes. We would rather have it reduced to nothing, but we can see a difficulty in that direction; we submit that 2° is quite sufficient.

1361. (*Captain Castle.*) From the outer edge or the inner edge of the wick?—From the outer edge of the wick.

1362. (*Chairman.*) Why do you and the pilots object to the crossing of the side lights?—We object because on account of the lights crossing the bows any change of course in a vessel showing the lights is not immediately indicated. If two vessels are approaching end on to each other, or nearly end on, if the lights are screened at an angle of 4° both vessels will have to port 4° before they lose sight of the other vessel's starboard light, and this is an unnecessary divergence from course. Then again, if vessels are passing each other starboard side to starboard side all clear, owing to the crossing of the lights, they are each misled into believing that the other vessel is approaching end on. If two vessels are passing starboard side to starboard side all clear, certainly they will pass close to, but clear. If the lights are screened to 4°, the vessels appear to be approaching each other end on, whereas, as a matter of fact, they are passing starboard to starboard. The result of that would be, in practice, that we have to port our helm, and bring both ships close together instead of keeping them apart, and each vessel will cross the other's bow. Take it the other way. Supposing I am approaching another vessel nearly end on, port side to port side, going clear, and I see the other vessel's starboard light, I shall have to port still further, as the rule directs me to. This would be dangerous in narrow channels, as passing unnecessarily clear of one object would throw you too close to another. And when you are going to sea against a 6-knot current a divergence of 4° of course would have as much effect as a full point, and that makes a very important difference in narrow waters.

1363. You know the Board of Trade attach great importance to this, that if the vessels are screened very fine, you might be green to green, starboard to starboard, and yet in a position which would be one of danger if the vessels kept their courses. Do you follow me?—I am trying to follow you. I think I do follow you. What you mean is this. If the vessels are passing each other starboard to starboard, green to green, of course they can pass each other if the light is screened rightly.

1364. No. I think that is precisely the point to which I wish to bring your mind. What is suggested, as I understand it, is this. Supposing the lights are screened very fine, there might, in fact, be positions in which the vessels would be green to green; that is, neither would see the red light of the other, and yet if they kept on their courses, without altering, they would not go clear?—No, sir, I do not agree with that view.

1365. I dare say you will admit that it is so in theory?—It is not within my experience; if a vessel has his starboard side pointing to another vessel's starboard side, of course they must pass clear.

1366. That is your view?—That is my view.

1367. But you know, that is not so strictly as a matter of theoretical calculation; if you screen vessels to 1° or 0°, it is possible to place them in a position where neither would see the red light of the other, and yet they would not go clear?—Well, you would have the masthead light to indicate the position of the ship.

1368. Yes, that may be?—The masthead light would indicate the position of the ship; I think I grasp what you mean; it is about this dark line, is it not?

1369. Let me illustrate it to you, because I want to have your view (*describing with models*)?—It is so. Yet the case would never occur in practical navigation.

1370. In theory, that is so?—It is in theory so, but that is not starboard side to starboard side, but starboard bow to starboard bow.

1371. (*Rear-Admiral Andoe.*) May I ask why it would not arise in practical navigation?—Because the slightest alteration of the helm would make it impossible.

1372. Because the green light shows across, and you give your helm a little touch in time?—Yes. You could not possibly steer two vessels so fine. Of course, I admit it is starboard bow to starboard bow, but in practice it would not occur.

1373. (*Captain Castle.*) In practice you would starboard?—Yes.

1374. (*Chairman.*) Supposing you were in that position, and you saw the other vessel approaching in that way?—No sailor ever steers like that.

1375. Would you consider it your duty to starboard?—Yes.

1376. You would also have the masthead light to guide you?—Yes.

1377. Do you think the Order in Council of January 1893 has, in fact, increased the crossing of the lights?—Yes, it has in many cases.

1378. But in some has it not also diminished it?—I believe it has.

1379. In your experience, what did pilots and shipmasters understand the rule to be before the Order in Council?—We have always understood that the expression "crossing the bow," meant crossing the path of the ship, a line projected ahead of the line of the keel. We never dreamt it meant crossing the ship's deck, crossing the ship itself.

1380. You understood crossing the bow to be crossing the projected line of the ship's keel?—Just so.

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1381. In your experience, was the old rule always observed?—No, I am afraid it was not. I believe the practice of surveyors was different; and some surveyors used to screen the lights one way, and others a different way altogether—I think a most dangerous way. And I am very thankful indeed to the Board of Trade for calling attention to the matter; many collisions which it was so difficult to account for, no doubt, can now easily be accounted for.

1382. Do you mean that collisions have been brought about by the crossing of side lights?—I have no doubt about it. I have had scores of instances within my own experience, where I have been proceeding up my channels, with vessels on my starboard side, where they ported across my bow. I could not understand it at the time, and used to put it down to bad steering or bad look out, or some unimaginable reason. But I can understand now that although I could see his green light he could see my port light.

1383. (*Captain Castle.*) That is due to want of management?—I only know the fact. I do not know the cause.

1384. (*Chairman.*) That is due to what is called the port-helm rule?—I believe the porting has been due to the screening of the lights. I have ported myself, I have no doubt, in many instances when I have had his starboard bow.

1385. I observe you said if you could only see both his lights, and he could see only one of yours, that that would be a more fruitful source of danger for the two vessels; if one saw one light, and the other saw two lights, when they should see either one or two, of course that is a source of danger?—A very fruitful source of danger indeed, I should think.

1386. Can you tell me, in your experience, of any cases you have known of danger arising from the lights crossing?—I know of one particular case. I think it was in January 1893. I could give you the name of the ship only I have not got my pocket-book here which has it in. I was in charge of a steamer coming from Point Lynas up to the North West Light Ship in a narrow channel, and I saw a vessel approaching me with her starboard light in sight some distance away on the starboard bow; I starboarded a little to increase the distance.

1387. When you saw her how did she bear?—About half a point on my starboard bow. While I was in the act of starboarding I noticed the vessel port. She was too close to port my helm, so I determined to keep my helm, and I ordered my vessel's helm to be starboarded, with the intention of passing the approaching vessel green to green, but almost immediately after I had given the order I saw the steamer's red light. In order to avoid the approaching steamer, I continued my vessel under her starboard helm, and the approaching vessel continued under her port helm till we both came right round pretty well stern on. I afterwards happened to meet the master, and to get charge, as pilot, of this vessel that I had met in this way, and I said to the master "Why did you port right across my "vessel, you were going clear?" He said "We were "not going clear, I saw all three lights of your "steamer quite distinctly, and therefore ported, in "accordance with the rule."

1388. So he saw your red light, when, in fact, you were starboard to starboard?—Starboard to starboard we were; and I attribute his having seen my red light to the fact that my red light was so screened as to be seen on the starboard bow of my vessel.

1389. (*Rear-Admiral Andoe.*) Because the lights of the two steamers were not screened similarly?—Just so, owing to want of uniformity in the screening.

1390. (*Chairman.*) Now, just one question about what is called the dark lane—if there is no crossing of the full rays, is there not danger from a dark lane?—No, sir, no practical danger. I have not seen it. I have had experience about this dark lane in taking pilots and putting them on board ships, and I have pulled in a small boat straight for the masthead light, to see if I could find the dark lane out, and in a few cases I have actually gone close up. You can see it, but it is scarcely worth while speaking about. I have noticed it in a tug boat when I have been going up narrow channels. I have seen the two lights and the masthead light quite plain, but suddenly they have become obscured when she has been close to.

1391. Do you attach great importance to the side lights as indicating the change of course, or deviation of the vessel?—I attach very great importance to it. We Liverpool pilots attach great importance to it. I think everything else should give way to that consideration.

1392. As a matter of practical suggestion, what do you think would be the best rule to lay down?—I hardly think myself competent to give an answer on that point, except what I gave in the previous answer. I think 2° of angle would be quite sufficient.

1393. You think 2° would fairly meet the case?—Would fairly meet the case. You can get the full illuminating power of the lantern where you want it. You get more direct light where you want it, viz., right ahead, and the more obscure rays across the bow.

1394. Two degrees?—Yes, 2°. If you have an inch and a quarter wick, you will have all the illuminating power you want, and the fainter rays you may have lightly on your bow. I should think that would meet it. The lights would converge at 14 times the distance between the two lights.

1395. Would you screen to the edge of the wick?—The outer edge of the wick is my idea. I should prefer 2° from the outer edge of the wick.

1396. (*Rear-Admiral Andoe.*) What reasons have you for preferring the outer edge of the wick to the inner edge of the wick?—Because it is the only aspect of the matter I have studied. I know something about the inner edge of the wick; but I think the outer edge of the wick would give us all we want.

1397. You say you prefer the outer edge of the wick?—It would give you the full illuminating power of the lantern right ahead.

1398. And if the wick were screened from its inner edge to the outer edge of the chock parallel to the keel, it would amount to the same?—Just so; exactly the same.

1399. You are giving, I presume, the view of pilots, rather than of the masters of vessels?—I am here to represent pilots alone; but I may say that the views I express agree with the views of every master I have came in contact with.

1400. Where do you Liverpool pilots take charge?—The Middle Mouse, about five miles to the westward of Point Lynas.

1401. Near to the Liverpool Bar?—No, 40 miles to the westward.

1402. You said just now that practically there was no dark lane?—Practically there was no dark lane.

1403. Does that proves that the lights always do cross considerably?—Well, of course, if the lights cross, there cannot be any dark lane; if they cross close enough to the ship's bow.

1404. Is it your experience, as a rule, that there is no dark lane?—I have seen the dark lane.

1405. Within your own experience of many years, as a rule you say there is no considerable dark lane?—There is no considerable dark lane, in my opinion.

1406. Therefore you believe the lights must cross?—I know, as a matter of fact, they have been crossing for years.

1407. In navigating the narrow channels, what is your rule as regards steamers passing each other in opposite directions?—To keep on the starboard hand of the channels in which the vessels are approaching each other.

1408. That leaves you red to red, going up and down?—Just so.

1409. When you see a steamer approaching and showing both side lights, and you consider you are as far over your side of the channel as you consider safe, would you alter your course, or would you trust to the pilot of the other ship keeping clear of you, knowing that the pilots understand how each other will act?—Yes, we should know.

1410. Without considering the steamer's lights?—Without considering the steamer's lights.

1411. I mean the bow light?—No; the first consideration of the pilot is to avoid a collision, even if he puts his ship ashore. If I was going up on my right side of the channel, and I saw a steamer coming down and showing me his two lights, I most certainly would consider it my duty to port still further, even if I ran the risk of going on to the bank.

1412. And going across her bow?—No, I would port still further; therefore I would get her on my right side.

1413. (*Captain Castle.*) That would be going up?—And he would do the same coming down.

1414. (*Rear-Admiral Andoe.*) Then you might put the ship ashore?—Yes, I might.

1415. Would you not trust to your brother pilot knowing perfectly well what you would do?—I do not like to trust anybody where a collision is involved.

1416. You would rather put the ship ashore?—I would rather put the ship ashore than strike another vessel, and then, of course, if I have got aground through the obstinacy of the other vessel, he will have to bear the blame.

1417. In this case you do not take the side lights as merely indicating that the pilot is coming down necessarily on her side of the channel, but you treat them as if you were in the open sea?—I treat them as if I were in the open sea.

1418. Do many collisions take place between steamers at night in narrow waters?—Yes, I am afraid there are a good many. I have no personal experience of them, but there are a very great number.

1419. In the Mersey?—In the Mersey there are, I am afraid.

1420. I mean of ships of considerable tonnage, passing up and down in charge of pilots?—They are not many, considering the enormous number of ships, but still there certainly are a number of collisions.

1421. When compared with collisions which take place in the channel?—Yes.

1422. There are more in the Mersey?—I should think so.

1423. And you attribute that to the crossing of the side lights?—Partly. Of course it is due to many causes, a collision is; but I think it is partly due to the crossing of side lights.

1424. Do not pilots very frequently in navigating narrow channels, if they think action should be taken by the other ship, call one another's attention by blowing the steam whistle?—Yes, but we are rather averse to that in Liverpool, we are afraid of the confusion. We do not do it except as a last resort.

1425. You do do it?—Yes, but it must be a very extreme emergency.

1426. If she is going to pass you too close you do it?—Yes, in an extreme emergency.

1427. So as to give her a hint?—So as to give her a hint to go further away.

1428. Before the 4° regulation came out were you aware that the rays of the side lights always did cross?—No, I did not think they did. I did not personally. Before the Order in Council of January 1893, I was not aware of any crossing.

1429. Do you know that a very large percentage of the vessels that sailed from Liverpool had their bow lights screened to considerably more than 4°?—I am told so. I was not aware of the fact.

1430. You were not aware of it before?—Not till this inquiry. I have no knowledge of it myself.

1431. Now, for the safe navigation of ships, are you of opinion that the bow lights should be screened so that the full power of the light should be seen right ahead—as fully as on the bow, for instance?—Certainly. Yes, I think that is desirable.

1432. Are you aware that it is practically impossible to have a full light right ahead, unless some of the light is allowed to cross the bow?—A certain portion of the light's rays.

1433. (*Captain Thomson.*) You said you were in favour of an international uniform rule?—Yes.

1434. That, as I suppose, is because when you meet a foreign ship you want to be certain her lights are screened the same as those on your own ship?—Certainly, I want to know how to deal with her; I want to know my difficulty. I might pass one vessel with the light screened at an angle of 6°, and another at an angle of 2°, and another at 1°, and you cannot tell at night whether she is a Belgian, an Englishman, or what she is.

1435. Do you consider that in the case of meeting ships, 600 yards would be a critical distance?—Yes, it is time to do something when you are within 600 yards.

1436. In ordinary ships it would not be necessary to do anything before that distance—say 10 knot steamers?—I think the duty of a proper seaman is to take proper precautions immediately he sees the light, even if it is five miles off.

1437. I say "necessary." You do not think it is necessary to port your helm five miles off?—Yes, if I saw a vessel five miles off, and saw her side lights, I would port a degree or two.

1438. You said you thought 2° a safe angle of screening from the outside of the wick. If you were 600 yards off the steamer meeting you, and if her lights were screened to 2° from the outside of the wick, have you any idea to what angle you would see her light at that distance, both lights?—The lights would converge within 600 yards if screened 2°. Taking a ship 50 feet beam, the lights would converge 700 feet from the two lights with the 2° angle.

1439. That was not quite my point. Supposing you have a steamer on the starboard bow, to starboard of right ahead, and you are meeting that ship steering a parallel course, and her lights are screened to 2° from the outside of the wick; have you any idea up to what angle you would see her red light?—Well, I would see the green light from right ahead to 2° on the port bow; if the vessel was 600 yards distance I would get reduced rays of the light 2° on the port bow, and the full rays of the light right ahead.

1440. You are looking at the other ship's green light, when that ship was a mile ahead, or two miles ahead, would you see both her lights?—Yes.

1441. Her red and green?—Yes, her red and green.

1442. As she approached you, suppose you both remain in that position, there would come a time when you would lose sight of her red light?—Yes, certainly, when she was very close to I should.

1443. Have you any idea at what angle, or rather what bearing in degrees from your fore and aft middle line, you would lose sight of that red light?—2°; I cannot give you further than that.

1444. You think you would lose sight of the red light when she made an angle of 2°?—Yes.

1445. As a matter of fact, with a powerful light you would not lose sight of that red light until she made an angle of 6°?—Well, I am afraid I do not understand. I should reckon you lose sight of it at 2°.

1446. Because you think at this distance the screening of 2° to the outer edge of the wick would cut off all the rays of the light at that angle?—What I say is this, if you screen your light so that the outer edge of the wick makes an angle of 2° with the foremost end of the screen, you are bound to see the full rays of that light right ahead, and the reduced rays on the other bow.

1447. You said that when you were meeting a ship port to port and red to red and you saw all her three lights, and were going clear, and you were sufficiently on her port side to go clear of her, that you would port still more; why would you port still more?—To increase the distance between the two vessels.

1448. Why?—Well, for safety.

1449. But that suggests you were not going safely before?—What I said was, if I made myself understood, that if a vessel was approaching me with her three lights, at any distance, I considered it my duty to port a little more, and bring her a little more on the port bow. Of course, if she were four points on my port bow I would not, but if she was only 4° on my port bow, I most certainly would port another 2° or 3°.

1450. I understood you to say you were passing clear?—No, I mean when they were end on; I was treating it that they were end on, when, as a matter of fact, they were not. That is our trouble.

1451. I thought your trouble was, that a ship could be passing clear of you on her port side showing both her lights?—Yes.

1452. And you said, if that was the case you would port still more?—Certainly, I would port still more, because I would not know whether the ship was end on or not.

1453. That appears to me as if you thought before that there was a risk of collision, or else why should

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you port still more?—There is always a risk of collision when vessels are approaching each other with all three lights in sight.

1454. Screened to 4°?—Yes, certainly.

1455. Therefore the ships would not be passing clear of each other?—In fact, they are passing clear of each other, but they appear not to be.

1456. You mentioned that when steaming against a six-knot current you port a quarter of a point, and the effect is the same as if you ported a point; what do you mean by that?—I meant that if you catch the tide on either bow, it forges you right ahead and across the Channel.

1457. But this is the case of two ships meeting, both ships are in the same current, and both are affected by the same current?—They are both affected by the same current, but they are going in opposite directions, and one has got the current on the stern, and the other on her bow, and that makes all the difference.

1458. That makes a great difference?—Very great difference.

1459. Theoretically or practically?—Practical difference. It is a matter of every-day experience. There is no doubt about it. In fact, I may tell you, if it is hazy weather, and we are running up to the Rock lights, and we are not quite sure of the ship's compass, we would sooner it be on the flood than on the ebb. A quarter of a point on the bow in such circumstances is a great deal of importance, because you would be ashore before you got half way up under those circumstances.

1460. I quite agree that where you have a fixed point like the shore it does make a great difference; but if you were out of sight of land, the current might be running 100 miles an hour, and if you ported to a meeting ship, you would pass her at a distance due to the angle to which you ported; nothing else would happen?—Of course, there is no practical difficulty in wide waters.

1461. It makes no difference with regard to wide waters, you say?—No; it is only where a ship is proceeding against the tide in narrow waters. That ship must not divert from her course more than is possible.

1462. If I am meeting a ship and if I port a quarter of a point, I shall pass her at a distance on my port side due to my change of course?—No, I am afraid I should pass you too near.

1463. Why?—Because you would have the current on your port bow.

1464. That is, I know, an expression generally used by seamen?—There is no doubt about it. If you are proceeding against a current and you catch it on one bow or the other, say half a point, it will make a point or a point and a half difference in your course; it is a fact, and there is not the slightest doubt about it.

1465. Of course when you are steering the ship up the river against the tide you naturally give her very small helm?—For that very reason.

1466. That is, having regard to the land?—Yes.

1467. You have heard the expression "green to green"?—Yes.

1468. Tell me what you understand by "green to green." Ships passing each other?—Starboard side to starboard side.

1469. If the green light of one ship is right ahead of the green light of the other, would you call that green to green?—If the green light of one ship is right ahead of the green light of the other. Well, when I have a vessel right ahead of me and pointing in an opposite direction, I expect to see the three lights.

1470. I am giving you the case when the green light of one ship is right ahead of the green light of the other?—Do you mean exactly; absolutely right ahead.

1471. Right ahead?—I cannot suppose that case if I understand you correctly.

1472. I now take this case (*describing*). *There* is one green light, and *there* is the other green light. I am looking parallel to the line of the keel and see approaching *this* green light right ahead of *my* green light. Would you call that green to green. You would not call that passing green to green, would you?—It is passing green to green, and it is the duty of any practical man to starboard a little more.

1473. You would not call that passing?—I should call that passing.

1474. *That* I would call passing (*describing*)?—Yes, and you would starboard a little more.

1475. That would be green to green?—Yes.

1476. And in that case those two green lights will make an angle with each other?—Yes; but I never heard of two vessels colliding in that way, each with the other's starboard side open. I can almost fancy it is an impossibility.

1477. Still, you admit it was a case of green to green?—Then you must get out of it. It is *there*.

1478. You spoke of meeting ships passing starboard to starboard. What part of the river would that be in?—That is between Port Lynas and the North-West Lightship in the open sea.

1479. Now, about the question of "right ahead" what do you understand by the direction "right ahead"?—Right ahead? I mean right in a line with the ship's keel, projected ahead.

1480. Parallel to the ship's keel?—Yes.

1481. That is, if you are standing on the starboard side of the bridge, and looking ahead in a line parallel with the ship's keel, if you saw a green light you would say it was right ahead?—If I got a light amidships, if I saw it was in a line with the foremast, I would say it was right ahead. As a matter of fact, if you want the exact bearing, you must get right amidships. If you get at the side of the ship it is likely to prove deceptive. If you want to get a bearing or to know the exact position of the light you must stand right in the centre of the ship.

1482. Supposing you have a buoy not very far off, and are in a ship with a large beam, would you not to clear that buoy walk the same side of the ship on which the buoy is?—Certainly, because that is the side nearest danger.

1483. Would you not look ahead in a line parallel with the keel to see if you could clear that buoy?—Of course you would look along that line to the buoy and clear it.

1484. And if the buoy came on that line, would you not consider it right ahead?—No, sir, it is not right ahead.

1485. With regard to the question of the right and the wrong side of the river, the rule of the road says you must be on your side of the river when it is practical to do so and safe. Supposing from any cause you happen to be on the wrong side of the river or channel, that would not exonerate you from having to follow the rule of the road?—No, certainly not.

1486. In fact, pilots have always to go by the rule of the road?—We could not conduct the navigation of the port unless we carried out the rule of the road in its entirety.

1487. (*Captain Hallett.*) You advocate screening from the outer edge of the wick for all lights?—Yes.

1488. Is that because of the different way in which wicks are placed; sometimes athwart-ships and sometimes fore and aft?—Yes, and sometimes circular.

1489. Is that your reason?—That is one of my reasons.

1490. So that your screening shall be such as to shut off all rays of that wick in whatever way it is placed, whether fore and aft, or athwart-ships?—Yes.

1491. Or at an angle?—Yes.

1492. That is the reason you want it cut off from the outer edge?—From the outer edge. I think it is a great deal better if you take it from the outer edge.

1493. Then, if the wick is placed athwart-ships, and you screen 2°, you know you get your full light ahead?—Yes.

1494. You do practically?—Yes.

1495. Have you had any experience of electric lights?—No, none whatever. Of course I have seen them on board ships.

1496. And you have met them?—Of course I have seen them at sea.

1497. Do you know if there is any greater convergence from electric lights, practically?—No, practically I have never noticed any difference between them and the oil lamps.

1498. (*Captain Castle.*) You were speaking of the number of collisions in the river; are not the bulk of them with small vessels?—Yes, they are.

1499. Those—I do not know what you call them?—Grabbers we call them, small vessels, the bulk of them are, that get in the way.

1500. They are very often getting in the way of steamers?—Yes, the fact of the matter is they hold no certificate and you do not know who is in charge; they have no pilots, they do not care for anybody, they do not care for rules or regulations—they have nothing to lose, whatever happens, for they are carrying cargo, and the Board of Trade does not insist on their holding a master's certificate or a mate's certificate, or anything; you might have a navvy directing them.

1501. You say it is a common thing for vessels shewing their green light a little on the bow to port and come across?—It is a very common thing.

1502. I am not speaking of the river, but down towards Port Lynas; it is no uncommon thing for ships being a point on your starboard bow still porting and sometimes more than that?—Not a point—I would not like to say that, half a point very likely; but, of course, if you are a point on the starboard bow, there would be no cause for a man doing that, no cause whatever.

1503. The screening of the lights would have nothing whatever to do with that?—No.

1504. I have seen instances myself where a ship has been 3 points on the starboard side?—That is one of the things you see but you cannot account for them.

1505. With reference to going up the river, is it not much safer to go up on an ebb tide than the flood?—Yes.

1506. You are speaking of the tide catching the bow?—Yes.

1507. And the ship is much better handled?—Yes.

1508. With the tide against you?—Yes, the flood tide gets you on, and the ebb tide keeps you right away.

1509. That is one of the risks?—That is the main risk. There are rivers you are not allowed to go up on the flood tide.

1510. (*Mr. Bolam.*) You have a large number of sailing ships in the Mersey?—Yes, a large number.

1511. Is there any special rule of the Harbour Commission that these vessels should take a particular side of the channel?—There is a rule that each vessel shall navigate on the starboard side of the channel.

1512. Even sailing ships?—Yes.

1513. You said you were not aware that the side lights crossed the fore and aft line of the ship before 1892?—I did.

1514. Do you mean that you were not aware that the whole beams crossed, or that you were not aware that the outside beams crossed?—I was not aware that the full volume of the light crossed.

1515. But you were quite aware that the reduced beams did?—Yes, I was aware that the reduced beams did.

1516. When you were speaking about vessels coming up and going down the river and altering their helm and the tide catching the stem or the stern, you are alluding rather to the different force of the current in the centre of the stream and at the side?—No; whether you are in the centre or on the side the effect is the same; there is a slight difference, but not very appreciable.

1517. Because if the current is greater in the centre than it is a little on one side, when vessels alter their helm that would twist the stern of the one ship across the channel and tend to straighten the other ship in the line of the channel?—Certainly, it would have that tendency.

1518. How many miles from Liverpool do you, as a pilot, have charge of the vessel?—Sixty miles.

1519. Are you responsible for the navigation of that ship through all that 60 miles?—Yes.

1520. So that practically you not only want a rule of screening to assist in navigating vessels up the river [illegible], but you also want a rule of screening for your 60 miles of ocean navigation?—Just so. What I say is this, if you reduce the screening of the lights to the lowest possible minimum it will materially assist people in the narrow waters, while it will not handicap them in wide waters.

1521. When both vessels see both lights dead stem on, what is the best way of avoiding collision?—Port in accordance with the rules.

1522. Is it an advantage or a disadvantage to get a coloured light as promptly as possible, one light to one light?—Very important.

1523. What you want is to see the bearing change?—Yes.

1524. And for this would you require a large angle or a small angle?—A small angle.

1525. So if vessels come stem on, in your opinion as a practical man, as a pilot, small screening points to avoidance of collision?—Yes, it would be so with me.

1526. I should be glad if you could state roughly to what angle vessels yaw. Take a fine passenger steamer in fine weather, how fine can you steer her?—Take our fine Atlantic steamers, it would be a bad quartermaster who could not steer within a quarter of a point.

1527. And tramps?—Three quarters.

1528. Sailing ships going free?—Two.

1529. And sailing ships sharp braced up?—Well, half a point.

1530. (*Chairman.*) There is only one question I want to ask you, and that is in reference to vessels having a list?—Permanently?

1531. How would that affect screening?—It does affect the steering.

1532. You are speaking about the steering. I was speaking about the screening?—Well, I have never noticed if it ever had any perceptible effect, perhaps it might have, but I should not like to give you an answer to that, because I have not noticed.

1533. Can you give me any idea, practically, what sort of list different vessels get. You have to bring vessels into Liverpool. Have many of them a list?—Yes, some of the timber vessels have come in like *that* (*describing*) with an angle of 45°, and some grain vessels sometimes are listed a good deal, although they try every means to avoid it. But I should think 10° a very heavy list.

1534. If that has an effect on the screening that is an important matter to be considered?—It is an important matter to be considered, but I can really give you no opinion, because I have not looked it up and never thought of it till you suggested it.

1535. (*Rear-Admiral Andoe.*) What do you consider about the average which ordinary steamers, nine or ten knot vessels, will steer in moderate weather coming up the Channel?—An ordinary tramp. A great deal depends upon the discipline. Some masters are very particular and their officers are very particular, and others are just as careless. You go on board one vessel, and the master is very easy, and you go on board the same ship with a different master, and he will, perhaps, steer within a quarter of a point. It is not a question of the capability of the ship.

1536. I am speaking of the helmsman, I want to know what you find in practice these ships generally steer to in the channel?—If they keep within half a point I am quite satisfied.

1537. A quarter of a point either way?—No, half a point either way. I am quite satisfied if they keep within that; and a good helmsman will keep within that. Others will exceed that, and will steer right over, but they get a rap from the officer on the bridge; they must not exceed 3° or 4° either way.

1538–9. (*Mr. Bolam.*) You say the best man would only steer to 3° or 4°; that is more than a quarter of a point?—3°, I should think an officer in a liner would never think of grumbling at a quartermaster if he could keep her within 3°, and if he exceeded that he would admonish him.

1540–1. (*Rear-Admiral Andoe.*) Practically it requires the best helmsman to keep a ship within 2° or 3°?—Yes.

1542. (*Captain Thomson.*) You have said some ships steer to two points and some 3°; had you in your mind at the time, the alteration of the direction of the ship's head by the compass-card, or the real alteration of the ship's head by land—which do you mean?—No, by the compass.

1543. But you are aware that does not correctly show the corresponding alteration of the ship's head?—Yes; because the compass may be sluggish.

1544. The real direction of her head may alter, perhaps, 6°?—That is quite possible.

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1545. (*Rear-Admiral Andoe.*) I would like to ask you, taking one of the Thompson compass-cards which you have seen on Atlantic liners, is there any question that you can steer, as far as the card is concerned, correct to a degree or two; you have no hesitation in saying that?—No, the card is correct.

1546. What the card shows in moderate weather is correct; there is no swinging of the card?—No, but I can quite believe the ship's head swinging a degree or two and it not being indicated by the compass at all, because no matter how excellent the compass—even Sir William Thompson's compass—it cannot follow the ship's head immediately.

1547. Therefore, if anything, the indication of the compass-card is really less than the swinging of the ship?—It cannot be more, it may be less.

*Mr. J. T. Posgate.*

Mr. JAMES T. POSGATE called and examined.

1548. (*Chairman.*) I think you are one of the Trinity House pilots?—Yes.

1549. How long have you been a licensed pilot?—About 23 years.

1550. Do you act generally as pilot, or do you act for one particular line?—I am engaged by the Orient Company as their pilot. I have been so for about 12 or 13 years.

1551. What is the range of your pilotage; how far do you take vessels down the Channel?—I am licensed to the Isle of Wight, in the English Channel, and to Orfordness in the North Channel, the limits for which pilots are licensed under the Corporation of the Trinity House.

1552. Have you come here to represent your own views or the views of the body of pilots as well as your own?—Well, not only my own; I think I can safely say I represent the pilots also; that is, the Thames pilots.

1553. I daresay you are aware there has been a memorandum* from the Trinity House pilots of the port of London, protesting against the rule of the Board of Trade, and that is signed by a very large number of pilots?—Yes, sir.

1554. Amongst others, I see your name as one of the signatories?—Yes.

1555. I may take it the views of these gentlemen are substantially the same as your views on this point?—Yes.

1556. I do not know if you can give me off-hand about the number of the pilots in the port of London?—About 300 altogether, I should say; but then that is including what we call the exempt men in the river.

1557. But fully licensed Trinity House pilots; how many are there about; about 120, is it not?—What, for the sea?

1558. Yes?—Yes, for the sea. More than that, about 140.

1559. I observe that this is signed by 117 of the Trinity House pilots?—Yes.

1560. So there is something like unanimity in the views of the pilots on this subject?—Yes, there is.

1561. Now, what is your view as to the manner in which lights should be screened?—Well, I think that the lights should be screened as nearly as possible right ahead of the ship.

1562. Yes?—From right ahead to two points abaft the beam, as the Act says.

1563. Then, as to the crossing of the lights, I daresay you recognise that if the lights are exhibited so as to show their full light ahead, it is necessary there should be some crossing?—Yes.

1564. Of some of the rays?—Yes.

1565. Now, what is your view about that crossing?—Well, I think that if they could be screened—if it were possible to screen the lights so as to cross about one mile ahead of the ship—I am speaking now of one of the large mail boats, of 50 feet beam.

1566. One mile ahead?—That would be a very small angle. Certainly inside one degree.

1567. Do you mean one degree measured from the outer edge of the wick, or from the inner edge?—From the outer edge of the wick.

1568. There is a difference?—Yes.

1569. You have said from the outer edge of the wick. Do you think that is as convenient a mode of screening—I mean apart from the number of degrees, and merely as a mode of screening—do you think the measuring from the outside of the wick is as convenient as any other method?—I think so. The Trinity House Corporation went into it at one time. They rather leant towards screening from the middle of the wick, but there is very little difference between the two—a very slight difference.

1570. So that you are satisfied with the screening from the outer edge of the wick?—Showing you inside one degree.

1571. (*Mr. Bolam.*) Does the witness's expression "small difference" refer to the angle of screening, or to the most convenient method of screening?

1572. (*Chairman.*) I was asking the witness as to the method of screening, apart from the angle employed. I mean an angle of 2° from the outer edge of the wick would, of course, be a different angle from 2° from the inner edge of the wick. I was not alluding to the angle, but the point from which the screening should work?—Yes.

1573. And I understand that from this point of view it is as convenient to work from the outer edge of the wick as the inner?—Yes.

1574. Now I want you to be kind enough to give us your views. Why you think the screening should be as fine as you suggest; why should it not be 4°?—Because if you have it 4° a ship that is passing on your starboard or port bow—for instance a ship on your starboard bow would see your port light, and of course the one on the port bow—what we term fine on the port bow—would see your starboard light; he is not right ahead.

1575. You attach importance to the lights being screened as fine as possible?—As fine as possible.

1576. Do you think that applies equally to open water and to narrow channels, and that it is as important in the one as the other?—Much more important with narrow channels. If you only have two side-lights to deal with in the open sea, a 4° angle would be a safe one. Where you have only two ships to deal with, of course, it would make you get out of each other's road more. But in narrow waters you cannot have that degree.

1577. Of course, in the Thames you have experienced a great deal of work in narrow waters?—Yes.

1578. And it is speaking from that experience that you think the screening ought to be so fine?—As fine as possible; so that the lights are seen ahead at a fair distance. For instance, in Sea Reach, you might be going down with a steamer—you might be between the Mucking Light and the Nore Light and meeting three steamers, and you can put each of the steamers where you like and they would show you all three lights; with the steamer on your starboard bow you would see all three lights, and with the one on the port bow you would see all three lights; and with the one ahead of course you would see all three lights.

1579. Whereas, if the screening were fine, you would have two distinct?—Yes; and the least alteration made in the ship's helm would be indicated at once with a fine screening.

1580. You do, as I understand, attach importance to the full light of each light being seen right ahead?—Yes, right ahead. But I do not see the importance of having them seen right ahead close under the bow.

1581. That leads me to ask you what your view is about what is called the dark lane and the danger of it. What do you think about that?—I never experienced a dark lane. I do not say there is not a dark lane, but when you get into that dark lane you will be too close to a ship to do anything. That is with the screening of the lights ahead, because these powerful lights they have now show a different light altogether to what there was when the law was made, and when these side lights were first instituted. You have got to deal now with powerful oil lamps—mineral oil—and you have to deal with electric lights, too; and it is no uncommon thing now to see a steamer's lights five miles away from you on a clear night—electric light.

* *See* Appendix 6, No. 2.

1582. Now, before this rule as to the 4° screening came in, are you at all aware what the angle of screening in the vessels in the port of London was?—No, I am not. Speaking for myself and the pilots, we were under the impression that the lights were screened according as the Act was worded. The construction we put on it was that it was from right ahead to two points abaft the beam. I have seen vessels with their lights crossing before this came forward, this 4° screening. I have seen them.

1583. But your practical belief, on which you acted, was that the vessels were screened fine?—Fine.

1584. And that the lights did not show to any extent across the bows of the vessel?—No.

1585. I should like to have your views on this, for it is a matter to which the Board of Trade attaches great importance. You know the view taken by the authorities of the Board of Trade is that it is important to have a screening not quite so fine, in order to give the fullest effect to the rule or rhyme "green to green, "red to red, perfect safety, go ahead." I do not know whether you have followed the argument which is put forward on that point?—No, I have not.

1586. Just let me put it to you. The suggestion which is made is this: that supposing they are screened very fine, say, one degree, and you had two vessels approaching so that each would see the green light, and only the green light, of the other, and supposing they were advancing on parallel courses, then that would be, if they kept their courses strictly, a position of danger, although it would be a position in which they would be green to green (*describing with the models*). What do you say as to that?—I think that is too fine. We consider that, practically speaking, they are right ahead, the way you have placed them now.

1587. They are showing green to green, I mean them to be green to green, so that if they kept end on there would be a collision?—Yes. But you have not put the beam of the ship between them, there is not a beam.

1588. I am putting them so that they would be green to green, and at the same time so that there would be a danger of the ships or their yard-arms coming into collision?—Yes.

1588*a*. What is suggested is, that under those circumstances that is a position of danger, that is to say, there would be a collision if they kept their courses, and yet, owing to the extreme fineness of the screening, all that would be seen would be the green of each vessel. Now, practically, do you think that is a position of danger?—No, I do not think so.

1589. Supposing you were on one of those vessels?—Yes, and neither of us could see a red light.

1590. Yes, and neither of you could see a red light, what would you do?—Starboard, certainly.

1591–3. Supposing you saw the green as fine on your starboard bow as I placed it, then you would give a touch to the helm?—Yes, because you see the red light is not seen. I certainly should starboard so long as I could not see his red light.

1594. So that you do not say that is a strong reason in favour of the lights crossing at a greater angle in order to avoid that position of what is called danger?—The moment you get them so fine ahead, you know these ships are always sheering a little or deviating from their courses slightly to a matter of 2°.

1595. Exactly. Now, as a matter of steering, within what degree does a vessel usually steer?—Take a mail steamer, and she will steer within a couple of degrees easy enough in fine weather.

1596. That is very good steering, is not it?—That is very good steering, a couple of degrees each way.

1597. Generally the average is something rather more than that?—Yes, and I am very sorry to say that the modern vessels are getting worse.

1598. They do not steer quite so close?—No.

1599. Why is that?—Oh, because they are not built to steer.

1600. (*Mr. T. Sexton.*) They are built to carry?—Yes, built to carry, you cannot steer them.

1601–2. (*Rear-Admiral Andoe.*) Talking about steering, what is the average as far as you know, which the ordinary ocean tramp would steer in moderate weather in the channel?—Well, I tell you it is no uncommon thing to see them go a point and a half each way, and two points each way.

1603. Notwithstanding that we are considering the desirability of screening to a degree?—Yes, screening to a degree.

1604–6. In navigating the narrow channels of the Thames, for instance, the Ouse channel, or the Edinburgh channel, and still more so in the case of narrower channels like the Girdler channel, what is your rule as regards steamers passing each other in opposite directions—which side do you keep?—Well, we passthem on our port side in those channels.

1607. You keep on the starboard side of the channel?—On the starboard side of the channel; but if a man was well on my starboard bow, I should not certainly port to go over to him, I would let him pass that side if he elected to go that side.

1608. But, as a rule, pilots are supposed to keep on their proper side of the channel?—As a rule, but in Sea Reach you cannot do that. You cannot do that in Sea Reach at all times of the tide on account of the shoal water.

1609. But if you found yourself on the wrong side of the channel, would you cross the bows of the other vessel to get on your right side?—No, you cannot do it in Sea Reach. If you go down Sea Reach with a deep boat—if you are coming up you could keep right—but one coming down has to keep northward of mid-channel to pick the water.

1610. Therefore you cannot comply with the rules of the road in narrow waters?—No, and I cannot comply with the Thames Conservancy rules, not wholly or fully.

1611. If you see a steamer approaching you showing both his side lights, and you were as far over on your side as you think is safe, what action would you take?—I should not take any action at all.

1612. Leave her to get out of your way?—Yes, if you put me into a position that I could not port any more, I would not be justified in putting my ship ashore.

1613. You would not be justified in putting your ship ashore?—No, and you would expect him to follow the rule of the road and port a bit.

1614. Therefore you are guided in the narrow channels by the local regulations rather than by the rule of the road at sea?—Yes, but they both apply there.

1615. You cannot port your helm?—No, but he can port to come up.

1616. He can?—Yes.

1617. But you cannot?—And it is a rule of the road for him to do so.

1618. Do many collisions take place between steamers at night in the narrow waters of the Thames—the entrance to the Thames when they are in charge of pilots?—No, not many; not many in comparison with the traffic; there is enormous traffic.

1619. But in comparison with the collisions that take place round the coast of England?—No.

1620. Less in proportion?—Less in proportion.

1621. Does not this fact show that having pilots on board following their local regulations prevents the collisions rather than the side lights?—It does, to a certain extent; yes.

1622. And is not this also the case because the pilots understand one another and what each other's actions will be in the different parts of the river?—Yes, it is so, and what you are continually seeing vessels doing, if you meet them in the same position. For instance, I have been going down Sea Reach on the bridge of a steamer at night since these lights have been screened at the 4° angle; a steamer was going up on my port bow, and the captain has said "That vessel is coming on," and I said, "No, it is the screening "of the side lights, it is all right." He said, "You "can see she is coming right on you." I said, "No, "she will be all right," and she passes all right. If the captain had had charge he would be doing something that was not necessary, only it was my knowledge, and I knew what the other pilot would do.

1623. Therefore pilots trust one another to do the right thing?—The right thing, yes.

*Mr. J. T. Pesgate.*

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1624. And they are not guided so much by the different lights as they would be at sea. Is that the case?—Yes.

1625. And supposing you see a vessel not acting as you think she ought in passing you, is it not the custom amongst the pilots to call attention to one another by the steam whistle?—Yes, if we see he is going into danger in any way we do that.

1626. Are you of opinion that for the safe navigation of steamers generally it is desirable that the side lights should show as strongly right ahead as at any other point?—Well, I do not know it is quite as desirable they should see the full power right ahead, because if you have the masthead light you know there is a a vessel of some kind or other. I know there is some danger then. I do not think it applies to them with equal force as it does to a sailing ship, because with a steamer you have got, in addition to the two side lights, the masthead light. There is a light there, and it tells you there is a vessel of some kind there, and you can form your own opinion, generally speaking, that it is a steamer's masthead light, although you may not see his side lights.

1627. Are you of opinion that it is not as necessary to see the side lights of a vessel with the same brilliancy directly ahead of a vessel as, say, at four point on the bow?—I do not think it is as necessary perhaps with a steamer, inasmuch as you have got the masthead light, but it seems to me necessary it should be so with a sailing ship, because a sailing ship is only dependent on her side lights for safety.

1628. You do not depend on the masthead light to show the direction in which a vessel in steering?—No, but you know as a fact there is something there, and you must not run over it; you must be on your guard.

1629. But in thick weather you want to see how you are steering coming up channel?—At once; you want to know what to do.

1630. And supposing you are between one point on the bow and right ahead, then the two lights are dimmed somewhat?—Yes.

1631. You cannot see them as well as you could if you were approaching the vessel at four points?—No.

1632. Do you think that is desirable, considering it is a point of danger?—Well, I do not know that it is desirable exactly, but still it does not seem to me to apply to a steamer so forcibly as it does to a sailing ship.

1633. No, I did not say that. I refer to a steamer?—Because there is a masthead light. You have got to port; you need not run over it; there is a light of some sort.

1634. Before the 4° regulation came out were you aware that the rays of the side lights always did cross?—No, not before; I have heard so since, because of the tables that the Board of Trade issued, showing the difference in the angles of screening, but, as I told the Chairman just now, we were previous to that under the impression that the side lights were screened according to the interpretation we put on the Act, viz., from right ahead to two points abaft the beam, and we were not aware they crossed the bows to any extent.

1635. You were not aware that a very large proportion of the ships sailing from the English ports had their lights screened four degrees?—Not then, but we are now.

1636. You were not aware then?—No, that is what I say; we have only found that out since the discussion came on about the side lights, and through the Board of Trade publishing the tables.

1637. If the screening took place so that the line drawn from the inner edge of the wick to the outer edge of the chock on the screen were parallel to the keel, so that the full force of light might be thrown right ahead as well as anywhere else on the bow; are you aware that the rays of the light would cross at a comparatively short distance?—I am aware of that, yes; that is why I advocate screening from the outer edge of the wick, and then you have to consider that the flame is wider than the wick.

1638. If you were to screen as you propose, 1° from the outer edge of the wick, do you know that much of the light would be cut off from being seen right ahead?—Well, how far ahead, sir?

1639. Anywhere ahead?—Well, I beg your pardon, sir. If you are a mile away from one of these big ships at night, her two side lights look no further apart than those lights (*pointing.*)

1640. But the chock would actually cut off a large portion of the rays from going beyond at all?—It might, but somehow you look right down those screens. With those short screens you cannot screen the light so far ahead as that to a mile.

1641. You cannot what?—You cannot hide the light that way.

1642. No, but you spoil the light?—You might spoil it a little, perhaps.

1643. Now supposing it were proved beyond doubt that the average screening had been 4° or more before this new regulation came out, do you consider that any alteration should be made, or that they should go on as formerly?—No, I consider it should be made.

1644. Alteration should be made?—Alteration should be made.

1645. In what direction?—As I say.

1646. Towards reducing the angle?—Yes, to screening the lights as fine as it is possible to screen them.

1647. Although it might be a distinct alteration from what had been the former custom?—Yes, but there has been no uniform custom hitherto. They have been all at different angles.

1648. You said just now that so far as your experience goes there is practically no dark lane?—No, practically no dark lane.

1649. That proves, of course, that the rays of the light must have always crossed?—Yes.

1650. And that rather near to the bow of the ship?—Yes, you may say that. I never found a dark lane yet, but I do not deny there is a dark lane if you get near enough to the ship; but you are then too close to do anything.

1651. (*Captain Thomson.*) You have practical charge of ships, I believe, right down the channel, have you not?—I am licensed to the Isle of Wight.

1652. But you have experience of avoiding collisions in the channel generally?—Yes, certainly.

1653. In the case of meeting a vessel is your practice the same in the channel as it is in the river?—No, not exactly.

1654. What is the difference?—Well, you are bound to pass vessels very close, green to green, in the river, very close; for instance, if you are in any of the channels where there is not much room and a man coming up or going down, as the case may be, passed on the starboard side, you are bound to pass close to him.

1655. In the river it is a necessity; you cannot avoid it?—It is a necessity in the river, you have not the room.

1656. You have not the room you have in the sea? No. Then you would not run the risk. I mean you would not be justified to go past the steamer within almost touching distance, so to speak—hailing distance.

1657. Now, you advocate a screening of 1° from the outer edge of the wick?—No, I do not advocate screening to any degree; I say the lights should be screened as fine as possible. I would not object to a 1° angle.

1658. As near as possible?—As near as possible right ahead.

1659. Then, if the lights are so screened as near as possible right ahead?—As I said, the lights should converge in a steamer of 50 feet beam about a mile ahead of the ship.

1660. In the river, if the lights are screened as nearly as possible right ahead, you would see the green light, and he would see your green light, and you would keep on a port course, passing close to him?—Yes.

1661. But you might pass very close?—You might pass very close.

1662. And in the river or in the channels you do not consider that a foolhardy thing to do, because it is a necessity?—Yes. You are passing vessels within your length in the river, but at sea you consider a vessel very close to you when it is so near as that.

1663. Now at sea you might pass a ship under those conditions, if you did not alter your course, green to

green at a distance, say, of 20 feet?—Oh no, I do not think so.

1664. You would not consider that safe?—No, I do not think you would pass her within 20 feet. You would be able to form a better opinion of the ship's distance from you.

1665. I mean if you did not alter your course under the same conditions?—Yes.

1666. But that would not be safe?—No, it would not be safe.

1667. If, on the other hand, you had a larger angle of screening, you could not possibly pass a ship so close, green to green?—Not at sea.

1668. But in the river you could do it?—You could do it, but then it is sometimes the fact that if he was so close on your bow as that you would see his port light, and you would be altering your course.

1669. Seeing his port light?—Yes, if you put her so fine as that, you put him in a position to pass more than 20 feet at sea. In Sea Reach in that position to pass at 20 feet I should see his port light.

1670. With your fine screening?—No, with the 4° angle you are talking about.

1671. In the river you would see his port light?—Yes.

1671*a*. Yes, but still, if the channel was narrow, you could not afford to port; would you consider it would be safe to pass him, starboard to starboard, seeing his three lights?—I do not know; that would depend on circumstances.

1672. I understood you to say just now you did. When your draught of water did not admit of porting, you did pass like that?—Yes, I did.

1673. Therefore, in the river, you at times do so?—Yes.

1674. But it is contrary to the rules of the road?—Well, it is contrary to the rules of the road. When you put it so fine as that, a man going only 20 feet off my line of course, I should assume he was as near as possible right ahead at one time—when we first sighted him.

1675. Is it not, perhaps, the most difficult part of your work, drawing the line between keeping your proper depth of water, and altering your course as it may be necessary to avoid collision going through the channels?—Yes, there is the difficulty.

1676. And as long as that difficulty exists, you would never be able to say precisely whether you could obey the rule of the road or not; it is left to your judgment?—Yes, of course, it is left to your judgment. I was only following you out as to what you said about applying the rule of the road, but I said previously, you cannot possibly carry the rule of the road out always.

1677. But you always would if you could?—Yes, if you could.

1678. You mention a case in which you had two ships going down the river, or going up, showing all three lights on your starboard bow?—I said in Sea Reach it is no uncommon thing to see three vessels approaching you and all three showing both side lights with the present system of screening 4° inboard.

1679. What would your practice be in that case?—Well, that just depends upon the ship I was on board of.

1680. If the depths of water admitted, would you not port to both those vessels?—I might do it or I might not.

1681. You might not?—No, I might not.

1682. Even if you had water and room to do so?—Well, there might be other vessels that prevented me porting on our starboard bow.

1683. That leads to another question. Does not the rule of the road apply to two vessels only?—Well, if you put me at sea I should say yes, we would port.

1684. You would?—Yes.

1685. You would on the river if you had room?—There might be other vessels. There might be room but I am speaking of two vessels if there were other vessels about.

1686. But at sea you might have other vessels about?—Well, hardly, you could not assume that.

1687. Your own judgment has to be exercised with discretion?—Yes, of course it has.

1688. Do you not consider that this Article 15 of the Rule of the Road means that when two vessels are meeting each other end on or nearly end on, so as to involve risk of collision, they are both to alter course to starboard so as to pass port to port?—Yes, port to port.

1689. Do you not think that applies more or less, in spirit at all events, to all these schedules or sub-articles, whatever they are?—Yes. Well it does.

1690. That is the spirit of the rule of the road, that two vessels meeting end on should alter their course to starboard?—Yes; "end on, or nearly end on," that is how it is worded.

1691. You told us just now that if you saw a green light practically ahead of you at night you would starboard?—If I did not see his port light I should, because there would be nothing to indicate to me but what he was crossing me, although it would not be my duty to do it; sometimes we have to do it to avoid collision.

1692. Is it not a fact that from the point of view of pilots you generally meet ships—you do not often cross ships in the channel?—No, we are not crossing the ships.

1693. You do not look at the matter so much in that light?—We find we are crossing ships sometimes when they are going out on the Foreland.

1694. As you say, when you saw that green light, that ship might be standing at right angles to you?—Yes, of course it might.

1695. Then why should you starboard?—If he is on my starboard side?

1696. Yes, why should you starboard?—I have to keep clear of him if he is on my starboard side, and by starboarding a little it would ensure more safety.

1697. It would be very awkward if you were going down a river and had many ships crossing you, if you had to starboard for every green light you saw ahead?—Of course it would.

1698. Therefore, in many cases, you would not starboard?—No.

1699. Therefore, if a ship, showing a starboard light, came right on to you there might be great risk of a collision?—But I am not going to let him do that exactly.

1700. (*Captain Hallett.*) You could tell by the alteration of the bearing of that green light if she is coming straight at you or crossing your bow?—If she was coming fine——

1701. If she was crossing your bow you would know it from the alteration of bearing?—Yes, if she was crossing at right angles you would probably have seen it before she was crossing.

1702. Is it not the case that in the river and in these narrow channels from your accurate knowledge of the banks and the draught of the ship you can judge where the ship is going to pass you?—Yes.

1703. You can form a judgment there that you cannot form at sea?—Of course.

1704. So that the practice in the river is much more dependent upon your personal judgment than upon the actual position of the lights that you see?—Yes.

1705. Or the rule of the road?—Or the rule of the road.

1706. (*Captain Wilson Barker.*) Do you think the 2° would be rather fine for sea work?—I think it would be too much.

1707. Too much for sea work?—Well, I think 1° would be better.

1708. One degree quite sufficient?—Yes.

1709. For sea work?—Yes. I will tell you what happened to my brother, who is a pilot, going down in one of the New Zealand boats, to show you this 4° angle and the objection to it, and how it very nearly resulted in a collision. The New Zealand steamer, which we will call A, is proceeding down channel between Dungeness and the Royal Sovereign light, steering west, and is meeting B proceeding up channel on a parallel course about one point on A's starboard bow. A intends passing B on the starboard side, when A sights another steamer C right ahead showing both side lights.

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A ports half a point so as to pass C on port side, still keeping B on starboard bow; but A's side lights being screened to an angle of 4° inboard, A after porting the half point opens her port light to B, who at once ports. A has to hard-a-port and just avoids colliding with B. C has also to hard-a-port to avoid colliding with B, and B, to avoid A, crosses C's course.

1710. What disadvantage do you see in that position?—I think, if the lights had been screened fine they would have passed in between each other, very nicely—there is no doubt about it. Six weeks ago I was with the "Ormuz," and we stopped 26 hours in the Downs in a fog. The day previous had also been thick in the Channel, and on the fog clearing we proceeded and passed that night some 100 steamers between the Downs and Beachy Head. I merely mention this by way of illustrating the importance of having the side lights for the purpose of safe navigation screened to a fine angle in crowded waters.

1711. The question is whether he can be trusted altogether to work his ship in that way you are discussing?—Of course, that is the difficulty.

1712. (*Chairman.*) What I gather you desire to do is to make it as clear as possible from what he does whether he is experienced or whether he is not?—Yes.

1713. (*Rear-Admiral Andoe.*) I think the people we have least to consider are the pilots, because they are always at it, and they know what one another will do. They see a big ship is coming along and know he has got a pilot on board, and each knows exactly what the other will do?—Yes.

1714–5. What would you do when the vessel yawed, that is to say, if he did not steer well, and you saw sometimes one light and sometimes the other?—There is nothing else for you to do but to port.

1716. In passing that is what they do?—Yes, but you must not forget that all that time the man is coming on.

1717. (*Captain Barker.*) No doubt that is a puzzling situation to be in, but we have to consider that there may not always be experienced pilots, and you have to provide for the weakest link in the chain?—Yes, that is so; that is why I suggest this.

1718. Do you not think many collisions happen through each man thinking the other man is going to do something different from what he does?—Yes.

1719. Each thinks the other is going to get out of his way?—Yes, and officers will not give way in time. And the consequence is that very often difficulties arise and danger ensues.

1720. What do you think as to the position of the lights with regard to one another; what do you think of the vertical plan?—No, that is wrong.

1721. You think they ought not to be in a vertical line?—On the bridge is the best position, as the ships are reckoned, but there is a better position than that, but you cannot carry it out. You have got it *there* [*describing*] putting the masthead light *there*, and the side lights *here*, and the masthead light being a distance above the deck equal to the beam of the ship. Then you get these two lights crossing either way. He is coming to you *there*, and you have got the masthead light over the port light, and you know he is going all right, because there is an angle of about 45° there; if he ports a little, and brings you open to his port light, you know he is coming towards you, and in this case you know what he is going to do. You know he is going farther away from you, but *that* is the best position [*describing*] but you cannot carry them in that position, because, when you get on a vessel like that, 40 feet forward, you get in the narrow part of the ship. But *that* is about the best position.

1722. (*Captain Castle.*) In a line with the masthead light?—No, forward of the masthead light. Put the masthead light there, and you get the two lights in one.

1723. (*Mr. Bolam.*) You would have them as much before the masthead light as the beam of the ship?—As much the width of the ship ahead of the masthead light.

1724. That would equal the distance of the line joining the side lights?—I do not believe in the vertical position but in the bridge position.

1725. Your district of pilotage is a compulsory one?—Yes.

1726. What vessels are compelled to carry pilots in your district?—All passenger steamers, all vessels carrying passengers, and all vessels that are bound to foreign ports, that is south of Brest, with cargo.

1727. That is, home trade cargo vessels are not compelled to have pilots?—No, but home trade passenger ships are.

1728. Then a great number of vessels must be going through your compulsory pilotage district not carrying pilots?—A great many.

1729. So that every vessel going up and down does not have the benefit of the assistance of an experienced pilot?—You see all the coasting vessels, do not carry a pilot, but there is no doubt that the captains from continually trading in and out of the port are equal to the pilots.

1730. Within your district a great number of the masters are, I believe, qualified to act as pilots?—Yes.

1731. So that practically a very large percentage of the vessels going through your pilotage district would not have special pilots on board in addition to the ordinary people of the ship?—Quite so.

1732. When you said you did not know before 1892 that lights crossed the bow, did you mean the full light or the diminishing light?—I meant the full light.

1733. You knew the diminished rays crossed the bow?—Yes.

1734. Do you say that in restricted navigation, practically river navigation, the narrow angle of screening is imperative for safety?—I do.

1735. Do you say that your difficulties as a pilot, with all your skill and care, are increased with a wide angle?—I do.

1736. Do you think that a small angle is practically as good in the open sea as a large angle?—I think so.

1737. Then, in point of fact, if that small angle is imperative in your navigation, and is equally good in open sea navigation, you would say that both for sea navigation and for your restricted navigation a small degree of angling across is the best thing?—One uniform screening, I think, is best both for river and sea.

1738. (*Mr. Scrutton.*) The dark lane does not trouble you?—No.

1739. I suppose the real reason is you never allow yourself to get so close?—Yes, probably.

1740. Have you any idea how many registered vessels come up to port day by day, every 24 hours?—No.

1741. Supposing I said there were 150, should you think it reasonable?—In 24 hours, in and out?

1742. Up?—I do not know that it would be 150 day by day.

1743. On the average. That is the average you may take it, 54,000 in a year; and of course they go down again. When these regulations were made in 1892 as to the 4° angle, did you notice any difference?—What, in the navigation of ships?

1744. In regard to the lights?—Yes, there is an element of uncertainty now existing, when you see a vessel on your starboard bow, whether he will continue to pass you there.

1745. How does that arise?—Vessels you are passing in the daytime, starboard to starboard, with confidence, at night time port to you, and we consider it is only the screening of the lights and their seeing the light across the bows causes them to alter their course.

1746–7. The evidence we have is that the lights were screened even to more than 4°?—Before 1892 we used to say, "He is on our starboard bow; he cannot "see my port light." But now we know the port light is screened 4° across the starboard bow. So that is constantly before us, and we think he can see the port light probably.

## Thursday, 9th May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

Mr. THOMAS TASKES HOGG called and examined.

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1748. (*Chairman.*) Mr. Hogg, I think you are one of the Trinity House pilots for the Port of London?—Yes.

1749. And you came here to express your opinion, and may I take it your opinion is shared by, at any rate, the great majority of the Trinity House pilots?—Just so.

1750. How long have you been a pilot?—Twenty years.

1751. Have you acted chiefly for one line of vessels?—The last 14 years for the British India Company.

1752. Acting for one company in that way do you confine yourself absolutely to that one, or do you do other work as well?—I have done other work, but you may take it I have confined myself for the last 13 or 14 years to the British India Company.

1753. Those are big vessels mostly?—They are all large vessels.

1754. What sort of tonnage?—Well, the largest one is 5,000 and some odd hundred tons registered tonnage, the Golconda going down to 2,000 and so on—not less.

1755. What is the variation of the breadth of the beams, and the distance between the lights of these vessels?—From 45 to 50 feet.

1756. What part of the Thames do they come up to? Do they come to Tilbury or to London?—They come up to the Albert Docks, but I only pilot them from Gravesend to the Isle of Wight.

1757. Before the present 4° rule, what is your view as to the angle of screening which practically was in force so far as your experience went? Do you think the vessels were screened finer than that or broader?—A great many were in line with the keel, and others were at various angles, and the only remark I ever passed was, that there was something the matter with the screens or that they were badly screened, as we saw the lights showing across the bows. That is previous to two years ago; but, of course, we take it for granted that what they ought to be, according to regulations, is in line with the keel.

1758. That is just what I wanted to know. Before the rule was in force, what is your belief, first of all as to what the state of things was?—My belief was that the screening of the side lights was in line with the keel, and all that we saw that were not in line with the keel we considered were defectively screened.

1759. So that before the rule was made, you did not think that the line of the lights crossed or ought to have crossed?—I thought that they ought not to have crossed.

1760. In some cases perhaps they did, but at any rate you considered it was wrong if they did?—Certainly.

1761. Now, I should like to know what your view is. Do you agree with this 4° rule?—I do not. I consider it ought to be in line with the keel; on the starboard side of the ship, that is, from right ahead to two points abaft the beam and nothing else, and on the port side of the ship the same way.

1762. Of course, you know if you have 4° there is a certain amount of crossing of the lights, the amount depending upon the breadth of the ship?—The breadth of the ship.

1763. Now, why do you consider it objectionable that there should be that crossing of the lights?—I have two special reasons. The first is that a short time ago I passed a large steamer in the English Channel, and her green light which was probably a blue-green—the best colour—I saw on my port bow crossing the other steamer's bow about two points. His red light was dim, and the result was that all that I saw was the mast-head and green light; but I saw that he was not starboarding, otherwise I would have had to stop. And as we drew nearer towards him, I could make out his red light very dim; in fact, nearly out, I suppose. Now, if that green light had not been crossing that steamer's bows I should not have looked for it. I should have looked for his red light, and when I saw it, I should have simply said that man had a bad side light. Now, reverse the position and place the other steamer on my starboard bow. There are two kinds of lights, what they call the yellow-green and the blue-green; the yellow-green light at a very short distance becomes a dirty white, and you cannot see it very far; the blue-green light is very good and you can see it at 3 or 4 miles. Now, imagine that you have a steamer on your starboard bow carrying one of these yellow-green lights and that her lights cross. You only see a mast-head light and a red light, and you suppose that he is porting his helm, whereas probably he is doing nothing of the sort. There is no doubt in my mind that the crossing of these lights has in great measure been the reason why a great deal of porting has been going on which is unnecessary. There is existing at the present time, and it is no use disputing the fact, a class of men who when they have your green light open to their green light will port; if asked the reason, they would say it was to see your red light. The crossing of the lights, the red light crossing the bow, would simply intensify that porting of the helm, and there is no doubt that this porting has been productive of a great many collisions in its time.

The second reason is one that I do not suppose people have paid very much attention to. The rays of the red and green lights cross the ship's bows; and there is no doubt in my mind, from what I have seen during these last number of years, that these rays of light affect the vision of the people on the bridge in a way which they are perfectly unconscious. Time after time you will hear the remark of the officers on the bridge with respect to sailing ships, "That man has just put his side light over." The red or green light has just penetrated the rays that go round the bows of the ship. Considering this effect of your own side-lights, it is my opinion that the best place for them is the sides of the bridge. You minimise their bad effect by being on the bridge in a line with them. Of course it is not fair between the look-out and ourselves, because we have night glasses and are constantly searching the horizon, and therefore we see what they do not, but take two men of equal powers of vision and let one man stand on the forecastle and you on the bridge, he below the rays of the light, and you above them, that man would see a light with his naked eye before you would with your naked eye. I contend, that the more the lights are crossed the greater is the effect on the vision. It is upon these grounds that I prefer that the lights should be in a line with the keel. You will never get over this blinding

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effect of the side-lights; there it will be as long as ships are ships; but you can modify it, and for this purpose it it is preferable to have the lights in line with the keel.

1764. Of course you are aware that if the lights are to show the full 10 points—2 points abaft the beam and 8 points forward—they necessarily must, to some extent, cross, or, at any rate, the rays of them must cross?—The diffusion of rays, if we allow it to be 3°, would just give you what you want—the red light ahead; allow the diffusion of the light to be 3°, and I believe it is something like 3°, then, if the lights cut in a line with the keel with a diffusion of 3°, you would have just what you want; you would have the lights cutting right ahead of the ship, and the finer cut the better it is.

1765. As I understand your position, you do attach importance to the full light being seen ahead of the ship?—Yes, in a line, as I have described it.

1766. And I understand your view to be that, subject to the full power of the light being seen ahead of the ship, you would desire to minimise as much as possible the crossing of the lights?—That is my opinion.

1767. I do not know whether you have ever considered the exact angle at which it is desirable to screen. Have you ever considered whether 2° from the outer edge of the wick would give a satisfactory result?—We have had them from 2° I apprehend, and 1°, and right ahead; the nearer you can come to lowness that way the better. If I might take the liberty of showing you a sketch of the 4° which I have made out.

1768. Yes, certainly?—This (*producing a diagram*) is one of the ships I go down with; it is all to scale, I have worked it out. There is the trigonometry of it, if you wish. This ship is 450 feet long.

1769. This is all to scale?—Yes; there is the scale which it is done from. Now, this ship is 450 feet long from stem to stern, and from these two side lights, which are 50 feet apart, there is a distance of 150 feet to her stem. Therefore, it follows that *this* light from its outer edge of the wick, and *this* light from its outer edge of the wick, must cross at 207·5 feet ahead of the ship; that is what it works out to. Now at the distance of 1 mile, here is the red light, 425 feet broad, and the green light 425 feet broad. *That* is the plan of the light. Now, as I have already suggested, the diffusion of light is equal to 3° more; you then very nearly double this distance in the sea mile. This is cutting as though there were no diffusion of light, but a dead straight cut from the outer edge of the wick.

1770–1. (*Sir F. Evans*). You are only dealing with the red?—Yes. Now if you extend it you have 1,275 feet at 3 miles, and if you extend it as far as you generally see the lights you have 1,700 feet at 4 miles. Now allowing that there is 3° diffusion of light in addition, you see how very much, as you come along, you would have the red light. Now *here* is a ship at 4 miles off just coming up, and allowing the diffusion of light to be 3° beyond the actual screening, you would have this vessel right in the red light of the first steamer. There is no getting out of that fact. Further, the man on the first ship sees the second ship's red light. Here are two vessels, each actually in the red lights of one another, with not the slightest necessity, as far as the line of their keels is concerned, to do anything but keep their course, and it creates the element of doubt, which is what you do not want. *Here* is the green light showing also; *here* is his mast-head light, and *here* is his red light also, and here is my mast-head light, and my red light, and my green light. There is no necessity of either of us to alter our course. The probability is that one of us will. I am going to port to that red light.

1772. (*Chairman.*) Which it would be his duty to do, practically speaking?—Yes; that is how the thing works out. Now there is another thing; there are the 4° across the bow. Now, supposing that was a clean cut and there was no diffusion of light, that is pretty much what is ahead of your ship when you are looking ahead, but if you introduce the diffusion to the extent of another 3° you would have your red lights showing much further across.

1773. You get so much more?—Yes, and the other ship is the same.

1774. I should like to know your view about the dark lane?—Now there are two laws, as far as I can make out, in connexion with this dark lane; there is the law of optics which I know very little about, therefore I do not go in for that. The distance between the lights is 50 feet; now if those lights cut straight, without any diffusion at all, they would simply go round the world and come to where they came from, and they would be simply 50 feet apart all the way; but, according to the law of optics, or, in other words, narrowing in, if you subtend an angle like this by a dark lane of 50 feet—you then have this result, that if, which I should not like to see, you were sitting on a rock a quarter of a mile ahead of the ship, and the ship was not deviating the least to port or to starboard, she would come right over you, and you would never see the side lights; that is, with a clean cut light and no diffusion. But if that vessel deviated, the angle at a quarter of a mile is 1° 53′, and if she oscillate 1° either way you would see the light owing to the narrowing in. As I said just now, the optical view of things is that, as you go from them, you narrow them, and at half a mile it comes to 56½′. If you were to sit there you would not see the light, but if the ship oscillates the least bit you would.

1775. So that even supposing the dark lane ahead was really an absolutely dark lane, the effect would be limited to those very small degrees of variation?—A quarter of a mile, half a mile, and so on. Then you must consider this; that were you to ask any captain, pilot, or master of a ship that has navigated the 80 millions of tonnage that passes up and down the Channel in 12 months, I do not think you would get any one of them to say they ever have seen a dark lane. In times past and times present, we suppose things were the same, but in times that are past, you went in for more crossing of the lights. I do not think I can tell you anything more about this.

1776. (*Mr. Scrutton.*) May I ask one question in explanation. This is arranged for 4° screening?—At 4°.

1777. Then you speak afterwards of 3°. What did you mean by that?—Diffusion of light. This is done as though there is no diffusion of light in any sense at all.

1778. Then what is meant by the diffusion of light at 4 miles distant. Diffusion of light could not interfere at 4 miles distant?—Then you would have exactly what I have drawn out.

1779. Then you would come back to your 4°?—4°.

1780. (*Chairman.*) The rule is now to screen 4° from the outer edge of the wick. Apart from the question as to the size of the angle, do you think it is a convenient plan to screen from the outside of the wick, and take that as a point and fix the screen up?—I think the outside of the wick is a convenient plan, and I also think screening ought to be done at night and not in the day-time, so that you can really see what it is. When you do it in the day-time, there is a certain element of doubt, some crossing at 1°, some at 7°, some at 11°, one at 12°, and one crossing about the foremast. It is a peculiar fact this crossing of the light about the foremast; you could see his lights, but you could not tell what position the ship was in, if he was going to port or starboard.

1781. I want to ask you the view you take of the objection which is put forward on behalf of the Board of Trade, which suggests that if the lights did not cross at all you might have two vessels approaching one another green to green, and that if both vessels kept exactly the same courses, they would, in fact, come into contact with one another. Now these models are at the present moment, strictly speaking, green to green, and supposing the lights do not cross at all, this vessel would see only the green light of that vessel, and that vessel would see only the green light of this vessel. In other words they would be green to green, and if they were to keep their strict course, there would be a collision, if not of the ships, at any rate of their yard arms. Now it is suggested that that is a position of danger, whereas green to green is supposed to be a position of perfect safety. That is suggested as the reason why the light should cross to some extent?—As a matter of fact, if that was the position in practice such as you put it, no two vessels would keep on like that; either one would starboard and see the other was doing so, or probably both would starboard if they wanted to starboard; but, according to what I have already stated, this fellow would most likely port his helm; he is far more likely to do that than to starboard.

1782. You think there is too much porting?—There is; that has been the curse, and has brought about more collisions than anything else, and we have to contend with that.

1783. But you think in practice they would not act like that?—I do not think in practice any two ships would act like that.

1784. Of course, it is the duty of each ship to watch the advancing light of the other?—You could not do it. It is not possible. This vessel would oscillate. I never find fault with a quarter-master if they keep to 2° of the course, but as to keeping to 1° that they cannot do.

1785. That is considered good steering?—Yes, I never grumble at 2°.

1786. (*Sir F. Evans.*) I have not heard any question put as to the degree of rolling?—You may make use of another word, yawing.

1787. It was only as to this question as to 1°. That is a very little when you take the size of the ship. What line was that you are speaking of, a man sitting on a rock right a-head of the vessel?—I have worked it out. That is what it comes to, 1° 53′.

1788. One and-a-half?—2° you may term it.

1789. Two degrees of rolling?—Yes, of yawing.

1790. Oh, you mean the yaw of the ship?—Yes.

1791. I did not understand you then?—That is what I meant.

1792. (*Chairman.*) It has been suggested that some consideration ought to be given to the fact that vessels very often have a considerable list. Have you noticed, at all, whether that list has any practical effect in altering the angle at which the lights are seen?—Yes, one light will appear higher than the other.

1793. And, more than that, if the vessel is down a good deal, the flame remains, of course, perpendicular, but the effect of the chock turning over is to obscure it?—It would be so.

1794. Do vessels come to the Thames with much list?—I have seen, perhaps, one or two in 12 months with a list, but there is more seen of that in ships at Liverpool.

1795. Now with regard to screening, I suppose it is more important in narrow waters than in the open sea?—I have spoken to several of the river pilots in my time about the crossing of the lights, and their opinion is it would never do for them up in the Pool, and all round about London. They say they want the lights not to cross. You see you may have three or four steamers, and the lights are all crossing. I have seen them coming down three abreast in Gravesend Reach; and you may take seven steamers, and I will guarantee that you may stand on the bank at Gravesend and not one of the lights will you see the same. Some you can see half a mile, some one mile, some two, some four even, in that short distance. There is no uniformity in the power of side-lights.

1796. That depends upon the strength of the light?—On the power of the side lights which they are carrying, and the glass of the side lights, and the position of the mast head light. If the side lights of every ship were uniform it would be a great advantage. There are a great many steamers who have their side lights on the fore-castle, and others have them on the bridge. Vessels performing the same manœuvre do not present the same appearance.

1797–8. You lay great stress upon their being uniform as far as possible?—Yes. If you look at that light you will see how it is. There ought to be a uniform effect in the screening of side lights; there ought to be no element of doubt. What we are driving at, I understand, is to minimise all doubt.

1799. (*Mr. Bolam.*) Where would you put the side lights?—Astern of the mast head light.

1800. Abaft the foremast?—Yes.

1801. (*Chairman.*) Would you think the lights ought to be always kept abaft the foremast?—Yes, I do, for the reason I gave you, to modify the rays of light that are passing around the bow.

1802. (*Rear-Admiral Andoe.*) They have to place side lights where they can?—In aiming at the impossible we get the best light.

1803. You would have to build the ship for the side lights instead of placing the side lights according to the build of the ship?—Well, I do not know how that may be.

1804. In navigating the narrow channels of the Thames like the Ooze or the Edinburgh, or any of the narrow channels at night, are you guided more by local considerations; that is to say, do you keep always on one side of the channel or the other irrespective of the bow lights of the ship which is approaching you?—We keep our own side aboard as much as ever we can; that is to say, we keep our starboard shore going down.

1805. Supposing you see a vessel approaching you showing her two bow lights, would you cross over the channel, or expect her to move till she got on to her proper side of the channel?—If there were any element of doubt in the matter I should stop my ship.

1806. But you would not go the wrong side of your channel?—Not if I could help it.

1807. If you could not help it of course you would; therefore, whenever you see two lights coming down upon you, you trust that the experienced pilot who knows the local considerations of the channel, will keep on his side and clear you?—That is what we expect he will do. There is one exception to that; at low-water time it cannot be helped, if we are going down on the lowest part of the tide when there is just sufficient water. If we see we cannot port without going ashore, and we cannot starboard very far without going ashore, and if any steamers were coming up and they tried to insist upon porting their helm, I simply stop and let them do what they like. If they like to cross my bows I cannot help it.

1808. The side lights are no particular guide to you, because you know you must keep in a certain position in the channel?—And you stop.

1809. And you trust the other ship having an experienced pilot on board will do the right thing?—Yes, we expect they will do so.

1810. Do many collisions take place between steamers at night in the narrow waters at the entrance of the Thames?—There have not been very many. The cases of the collisions are up in the Lower Hope and Gravesend Reach. Lower down we have been very free, considering the amount of traffic, from collisions.

1811. But compared with the collisions that take place in the Channel?—There are less in the estuary of the Thames and more in the Channel.

1812. Does not the fact of all large vessels that are in the narrow waters having a pilot on board account for there being fewer collisions?—I should think it does.

1813. As they perfectly understand the action each other will take?—Certainly it does, and if all ships were made to carry pilots up and down the estuary of the Thames it would be a very great blessing.

1814. Are you of opinion that for safe navigation by pilots in narrow waters it is desirable side lights should show as strongly right ahead as anywhere on the bow? As clearly right ahead as on the bow?—I see no reason why it should not, beyond what I have already stated.

1815. You think it desirable the lights should do so?—It is desirable that you should show the full light for this simple reason.

1816. One moment; before the 4° regulation for screening side lights came up, were you fully aware of the fact that the rays of light did cross on most ships?—Only from what I saw and from what I thought was wrong; beyond that I was not aware of it. I believed the regulation was being carried out.

1817. You remarked just now you never saw a dark lane?—No, I do not know that ever I did.

1818. You think that is the general opinion of ship-masters?—I am not saying there is not a dark lane.

1819. Does not that point to the fact that the rays of light must have always crossed?—They may have crossed. The 3° diffusion would certainly do away with the dark lane.

1820. If the screens are so placed that a line from the inner edge of the wick to the outer edge of the chock is parallel to the keel, and consequently in the fore and aft line, you are aware, I presume, that the light from the wick must cross the bow at a certain angle?—Yes, from the outer edge of the wick.

1821–2. Well, at first the whole breadth of the wick. The line drawn from the inner edge of the wick to the outer edge of the chock being parallel to the keel is a straight fore and aft line. Therefore, the breadth of the

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wick outside that line must show a certain amount of light across the bow; it is practically impossible to prevent it. Do you admit that?—If that be so you simply still further confirm the fact that the dark lane has no importance as a consideration.

1823. (*Sir F. Evans.*) Reverting to your answer just now. You take the breadth of the wick at about an inch and a half, do you not?—Something like that, an inch and a quarter, or an inch.

1824. It is not material as to the exact width, but supposing it to be an inch and a half, and you were to take a line from the inner edge of the wick to the outer edge of the chock and make that parallel to the keel, the outer edge would be placed at an angle.

(*Mr. Bolam.*) With the 36 inch screen it is 1° 36′, and with a screen the Germans use it is 1° 27′; that is, one and a half degrees on the average.

(*Chairman.*) We have always called it one and a half.

1825. (*Sir F. Evans.*) If you call it one and a half, then, it would have this advantage: ahead of the ship the full light would show, and it would have the advantage according to your views as I understand them, that it would throw the point where they converge at the greatest possible distance away from the bow of the ship, provided you may see the full light?—Yes.

1826. Do you think that if you can throw this point as far as possible away from the ship that increases the safety of the ship, do I understand you to say that. Do I not make myself quite clear?—Yes, you make yourself perfectly clear, but what I have said is simply this, that that light showing right parallel with the line of the keel wherever it cuts, the full volume of that light ought to be seen.

1827. So it would if you train it from the inside of the wick to the outer edge of the chock; that would give a full light right ahead of the ship?—That is all we want.

1828. Now if you take the outer edge of the light to the outside edge of the wick, that will give you as a result an angle of 1½°. Now I want to ask you why you said 3° in your evidence just now?—I have not said so in my evidence. I did not say anything about it. I spoke about the diffusion of light.

1829. (*Chairman.*) You said 3° of diffusion?—That is all.

1830. What you meant to convey was that apart from the full range of light you ought to add 3° more for the diffused rays?—Yes.

1831. (*Sir F. Evans.*) As I understood, you said that 3° was the right degree to screen it?—Oh, no.

1832. Afterwards you said you assumed the diffusion of light as 3° in addition to the screening, whatever that may be. I want to get clear what your views are. Do you think it is sufficient if you screen from the inside edge of the wick to the outer edge of the chock, so as to get the full light and minimize in that way the angle at which the lights must cross?—Yes.

1833. (*Captain Thomson.*) Has your experience in piloting ships and avoiding collisions been mostly between Dungeness and Gravesend for some years?—The Isle of Wight and Gravesend.

1834. You said there are certain men in charge of ships at sea who always, or very often, port their helm?—To a green light.

1835. If they have occasion to think that the green light seen is that of a ship meeting them?—On the bridge we can see the sins of other people, and we are unconscious of our own, and if there are any sins on our bridge we have not been conscious of them. I will give you one case which occurred at night about a fortnight ago. I was between Dungeness, and the "Royal Sovereign," and a steamer was on my starboard bow 4 points. I saw him with his masthead and green light, and practically had no reason to think anything more about him. We were travelling about 13 knots. The first thing I saw was he put his helm hard-a-port and tried to cross my bows. He could not actually reach us. Then, when he found he could not reach us, he starboarded his helm and kept his course again. Can you conceive of such a thing as that? There was not any question of rays of light.

1836. (*Captain Castle.*) Where was he?—4 points on my starboard bow.

1837. Four degrees?—No, 4 points right away on my starboard bow. I could see his masthead and green light, and the next thing I saw was his working over to port to try to see my red light, and he could not reach us.

1838. (*Captain Thomson.*) That is the worst case, I suppose, you have known?—That is the worst case.

1839. You have seen other cases?—About three weeks ago there were three steamers showing their masthead lights and green lights off Folkestone, and they saw mine. With all this angling the first man kept his course, the second put his helm hard-a-port and he had to throw himself right across, and I had either to stop or angle and go under his stern. The third one kept his course and I was able to go under his stern. Then he starboarded and kept his course. These things are constantly occurring in the English Channel.

1840. Am I right in supposing from your experience that, when you approach a ship that you have reason to suppose is coming end on or nearly end on to you, and you only saw her green light, you would be rather careful as to whether you would starboard. You would not starboard to a ship that was going to port, or that you had reason to think might port?—If I had any element of doubt I would stop the ship.

1841. Therefore, when you have a ship end on to you, showing a green light which does not alter its position, you think the safest thing is to stop?—I do.

1842. Do not you think that in that case, or whenever it is a case for doubt, it would be much better if the rule to port, or to alter course to starboard were carried out by both ships?—When a green light is fine on the bow?

1843. Yes, or ahead?—Well, when you see three lights ahead, you port your helm and show your red.

1844. This is a case when you see only one light?—But why not both starboard in a case of that sort instead of both port, and give each other room?

1845. The only reason why you cannot both starboard is, that there is nothing in the Rule of the Road to tell you that you are both to starboard. You may starboard, but you do not know what the other man is going to do?—The probability is he will port.

1846. You see that that only occurs when your side lights are screened very fine. You could not see a green light only, or a green and white ahead or very fine on your starboard bow, if the ships are approaching end on, or nearly so, unless you have very fine screening; if the angle of screening was a little broader you would see both his lights then, and you would do what?—Well, if the masthead and the two lights were seen each man would port.

1847. There is no doubt about that, is there?—No, I agree to that.

1848. It is better, perhaps, to have some degree of crossing for that reason, so as to avoid any risk of one porting and the other starboarding when each of the two ships are meeting so as to come into collision?—I quite follow you.

1849. I am going to ask you with regard to the diffusion of light you mentioned. Have you any idea how that diffusion of light comes about?—No, I cannot go into that matter. I leave that to those who are able to deal with it.

1850. You think, practically, it will amount to about 3°?—That is my view.

1851. Therefore you think, at a distance of 400 or 500 yards, with 4° screening you would probably see a ship's light to about a 7° crossing angle?—That is just what it would be.

1852. And also when screened to 1° from the outside of the wick?—It would be equal to what you now state, 4°.

1853. (*Captain Castle.*) Speaking of a light right ahead, you say it should be in a line with the keel; do you mean the line of the keel with the stem, or the line from the lantern parallel with the keel?—I mean that a light should cut right ahead both sides to two points abaft the beam. I do not know where you are going to cut it from as regards the lamp. I cannot say.

1854. I want to know whether you would have it in a line with the keel, or in a line with the lantern?—What part of the lantern, the wick?

1855. Yes, the wick?—If you take the outer edge of the wick it would narrow it, and bring it to pretty much what you state.

1856. It would not show a bright light ahead?—Yes, it is essential to show a bright light, and the full volume of the light, because a shaded light would lead you on a dark night to think you were further off the ship than what you were. All lights ought to show their full volume if possible, because according to the intensity of the lights you are very much guided whether you are close to it, or far from it.

1857. The mast-head light is a certain guide too?—Oh, yes, you have got that all the time to guide you.

1858. That is a guide as well?—Yes.

1859. Do you think it is possible to have a uniform light in small vessels and large ships?—If you go into the River Thames you will see the barges have the best lights going, and that is the smallest class of vessels.

1860-1. But they do not go to sea?—No, but they have the best lights; and the man who is liable to be run over should have the best lights, for his own safety.

1862. With reference to keeping your own side going up the river, according to the Thames Conservancy rule, you have to keep your own side; but you meet lots of vessels, sailing vessels and schooners, reaching across the river?—It is purely a matter of judgment what you do then. We have a rule amongst ourselves that if you cannot get out of the way, you give four blasts, and let him get out of the way.

1863. But the Conservancy Rule are the same as the sea rules?—Yes, precisely, as far as that is concerned.

1864. And they hamper you very much at times, no doubt?—I should think so. We do the best, and they do the best. You cannot find very much fault with them. The barges are very much better than they used to be. When you are coming up amongst 400 or 500 barges it is a quick eye and a quick judgment to see what you have to do.

1865. (*Mr. Bolam.*) You have said that the pilots do not want the light to cross a fore-and-aft line?—No.

1866. Have you ever heard of any pilot who wanted the chock brought so as to come in front of the whole of the wick?—No.

1867. At the utmost they only want the chock brought fore-and-aft to the inner edge of the wick?—So I have heard.

1868. So that the person who is supposed to have advocated that the chock should obscure the whole of the wick does not exist, so far as you know?—No. Mind you, I am speaking of the river pilots from Gravesend up to the Albert Dock, and I am not one of them.

1869. When you say the pilots do not wish the lights to cross, you simply mean they do not want the full volume to cross, but they do not object to the diminished rays crossing?—I do not suppose they do, but that is very narrow water, a ship's length.

1870. In intricate navigation in channels, you said in reply to Rear-Admiral Andoe, of course in your vessel you give your vessel all your experience?—Naturally.

1871 And another vessel that you see coming in something like the opposite way, you also expect she is in charge of an experienced pilot?—Naturally.

1872. Is it always the case that the vessel you are meeting, and perhaps slightly crossing in the pilotage navigation, is in charge of a pilot?—Certainly not.

1873. So you do not know whether she is or is not in charge of a pilot—No; it is an element of doubt.

1874. (*Captain Hallett.*) Do not they fly a red flag?—We carry the flag, according to the instructions, night and day, but it would take a good pair of eyes to see it at night. They may see it on a moonlight night, but otherwise you could not see it.

1875. (*Mr. Bolam.*) You have drawn a sharp distinction between the full light, and the reduced rays, and the diffused rays; can you give me any idea how far from the other ship at the utmost you have seen the diffused rays—that is, the third type which you have named?—No, I could not.

1876. Can you say whether you have seen the diffused rays at a long distance from the other ship, or is it only at a short distance?—Oh, that is a question I could not answer.

1877. Could you not give any idea, because it is a matter of considerable importance?—The fact of the matter is that it is so regulated by the state of the atmosphere that you really could not tell. The other day I saw a light of one light ship apparently stuck on top of the other; all the way down the mirage was so great that it would give a very peculiar effect to any light. Some nights it is perfectly clear, and other nights it is so peculiar, when probably the atmosphere is thickened by a southerly wind, which gives very different results.

1878. Can you say what in your experience in the British India Company, and the other large companies' ships, with an experienced man at the helm, is the very finest steering that can possibly occur, for instance, the British India Company's vessels?—Well, I should say a couple of degrees on each side of the course. I should not grumble at that.

1879. But can you steer finer?—I do not think so.

1880. A witness yesterday gave us some information about yawing generally. Can you give us your experience as to what other vessels would yaw—tramps for instance?—Not particular to half a point.

1881. Or sailing vessels going free?—They will yaw too.

1882. How much?—Going free they will generally come up probably a point, and running—the last ship I had running took three points each way.

1883. And a ship sharp braced up?—Well, if they are fine ships, they will pretty well, in my opinion, come down very small, probably to a quarter of a point.

1884. When you see a green light a little on your starboard bow, and the bearing does not change perceptibly, it is green to green still, is it not?—Yes.

1885. Do you believe that is "perfect safety, go ahead"?—It has just been demonstrated that it is not.

1886. Did you ever believe that it was "perfect safety, go ahead"?—No; I am sure I would not keep my vessel in that position.

1887. Supposing lights are screened so as to be hidden just 4° from stem on; would that 4° be a sufficient angle of safety so that master and mates at sea could always say that whenever a green light is shown to a green light at an apparently small angle, that would be safety?—That would be better.

1888. If the other ship is just ahead with an angle of 4° and stem on to you, and you are stem on to her with a 4° angle?—She would pass 1,700 feet on my starboard side at that.

1889. It depends upon the distance you are off when you see each other to begin with?—Yes; but she would be coming along that line. This chart demonstrates that fact.

1890. Then do you think that 4° in the case of ships that see each other at a very long distance off to begin with, would be a sufficient angle of safety?—I can measure it off.

1891. In a general way?—In a general way, taking ships as they go, if the vessel was fine on the bows, 4° or half a point as the case might be, at half a point of course they would go clear; but each would starboard his helm to show the other what he is doing, naturally, and they would not come into collision.

1892. So that when vessels, even with the 4° angle of screening, each see the green light just with the red out of sight, instead of saying "perfect safety, go ahead," each would starboard his helm a little, so as to throw the other a little more on the starboard bow?—They would both starboard.

1893. So that in point of fact, if with the 4° angle—as compared with the 3° angle—it is always alleged that you have "perfect safety, go ahead," that would not really be a much better angle than the 2°?—It would be practically the same.

1894. Take, for example, the man you mentioned who was four points on your bow and altered his helm; 4 degrees would not satisfy him?—No.

1895. (*Mr. Scrutton.*) You spoke about it being necessary to be on the wrong side going down river, because of the want of depth of water. That is a matter that could be remedied by dredging?—Yes. That is a matter which I pointed out, if you remember.

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1896. Do you know the proportion of vessels that come up the river, and have regular pilots?—They all take their pilots at Dungeness.

1897. That is not my question?—I do not know the number that come up the river without pilots.

1898. Have you any idea of what the proportion of ships that come up without pilots bears to the proportion that come up with pilots?—I do not know the number.

1899. I will tell you; the regular pilots only take one vessel out of four?—That I do not know.

1,900. This is got from the returns, that out of 54,000 vessels that are reported in the year, it averages very little over 12,000 who come through with pilots.

(*Rear-Admiral Andoe.*) Steamers?

(*Mr. Scrutton.*) All sorts, every registered mercantile vessel.

1901. Those, of course, that have not regular pilots, the captains and mates who pilot them have to pass an examination, have they not?—Yes.

1902. That is sufficient, is it not; they have to satisfy the Trinity House that they are competent to take charge of their own ships, have they not?—Up and down, certain vessels. They are not put through the same examination as a regular pilot.

1903. Would you hold that they are as efficient as the regular ones?—Certainly not.

1904. Do you consider that to be an element of danger in the river?—I am not talking about that at all.

1905. No, but I am asking you the question?—No; it has nothing to do with the side lights.

1906. Supposing the lights were screened parallel, without any angle, would you expect, if you were a mile off, with a vessel right ahead, to see both those lights?—You would see them—well you have got one degree.

1907. No; I am supposing, for the sake of illustration, that the two vessels are approaching one another absolutely on the same line?—You could not; but if you are a quarter of a mile off, let alone a mile off, and you yaw just a degree one way or the other, you would see the light—as the ship yawed a degree one way or the other you would see the light.

1908. That is your judgment?—Yes.

1909. Is it a matter of opinion, or do you think you could say you have seen it?—It is a matter of calculation.

1910. (*Sir Edward Harland.*) If the chock was placed so that a true line from the inner edge of the wick would just clear that chock, and assuming that the wick were an inch and a half, or an inch and a quarter in width, would, you consider that the ray of light—a slightly reduced ray of light—would, at some distance ahead of the ship, cross the line of the vessel sufficient for your purpose?—Yes.

1911. You expressed yourself upon that subject satisfied with the ray crossing the line of the vessel to that extent? Yes.

1912. To pursue that a little further; supposing that the chock of the screen was thicker and the line drawn from the outside of the wick just passed the chock; would that be an improvement, do you think?—I think from what has gone before, and from what people have talked—I am not an expert in these things—that the outer edge of the wick is the proper thing to take it from, whatever the results may be.

1913. That is, taking it from the outer edge of the wick. Supposing, for instance, that the screening was such that the ray from the outer edge of the wick would just pass the chock and run parallel to the keel, do you consider it would practically mean rather widening the dark lane. Would you be in favour of that?—Yes, I prefer the outer edge of the wick.

1914. (*Chairman.*) May I interrupt with one question. I do not quite understand. Do I understand that you would like to see the light screened in a line parallel with the keel from the outer edge of the wick, so that in point of fact that chock would completely cover the wick?—No, I did not want the chock to cover the wick at all. I do not know exactly what you are driving at. You must clearly understand I have nothing to do with the fixing of the light or the screen, or anything else. I am simply dealing with the point from which you can see them.

1915. (*Sir Edward Harland.*) Do you think that at half a mile, or a mile, or even two miles distance, the rays of light from the wick would still find their way by the process of diffusion?—By the process of diffusion and also by the law of optics; according to the description you have given they would.

1916. What would you compare the green or red rays of light in this lamp with, would you compare the process of diffusion in this light as something like what we all know is the case with the electric lights in a fog where the whole atmosphere is filled with the diffused rays of light, and at the same time you cannot see where the light comes from?—No doubt in a fog you cannot see the electric light at all.

1917. But you see the diffused light in the atmosphere?—Sometimes you do not do that.

1918. I am putting these questions from the circumstance of your showing us your drawing, and you describe the lines you had laid down as lines of 4°?—4°.

1919. At a certain point they crossed, and after that the port light showed on the starboard side—the green light showed on the port side a little bit, you said, in addition to the 4°. I think you said there was 3° diffusion?—That is merely a matter of opinion, I cannot put that down for a positive fact.

1920. Are you speaking of it from experience, or are you speaking of it merely as a matter of opinion?—I have been merely speaking from what I have been told as to the theory of 3° approximately.

1921. Then you have not calculated it yourself?—No, I have not.

1922. In some ships the side lights are abaft the foremast or abaft the mast-head light, and in some ships they are forward of the mast-head light, and other ships they are on the bridge; but in a good many ships, particularly sailing ships, the side lights are on the forecastle, frequently in lighthouses?—Sailing ships have no mast-head lights; do not forget that.

1923. There are many steamers which have the side lights on the forecastle in lighthouses?—Yes.

1924. Do you say there is any advantage in so placing the mast-head light relatively with the side lights that, when you are going end on to a ship, you could see pretty nearly in what direction a steamer is ahead of you or crossing your bows, as the case may be?—You would have to have two mast-head lights.

1925. No. Supposing the side lights are on the forecastle, do you think there would be any advantage in having the side lights placed with the mast-head light at a certain known and appointed angle, so that when the ship altered her course, you would be able to judge by the angle as to the course the ship was then on?—Everybody is perfectly agreeable to anything where uniformity comes in, but where there is one light *there*, and another abaft, and another abeam, it is certainly very wrong, and it does not matter which way you have it. If you put it like *that* you should become accustomed to it. It is purely a matter of opinion. I personally prefer them on the bridge, because it takes years before you get others to get the bridge idea out of their brains.

1926. Assuming that the side lights were placed on the bridge, but assuming the mast-head lights were placed somewhere at an angle of 45° up aloft more forward of the bridge, like *that*, it would be an advantage?—Well, if you could keep any particular angle it is better than an unknown angle.

1927. I am referring now to the question of placing the lights for this reason: supposing the side lights are on the bridge, but that the mast-head light is immediately below the side lights, then you will see—we will put the matter of the mast out of the question for the moment—you will see that no matter how the ship was approaching you, as the mast-head light was pretty nearly plumb with the side lights, you would not be able to judge as to the course of the ship coming towards you?—No. I quite follow what you say, but the suggestion was thrown out, I do not know whether by Sir Digby Murray or not, of having the lights on the bridge, and having your mast-head light forward where it is at the present time, and having another bright light at a given angle, by which you could always tell whether she was porting or starboarding, or the angle that the ship was at.

1928. Then, upon that point you yourself have not formed any very definite opinion?—I have not. I have not gone into the matter of which you are speaking at all. I am merely taking it, judging from what I have seen, that the arrangement of the mast-head light is the best.

1929–30. But I suppose you are taking it that most vessels either have the mast-head light forward or abaft the side lights?—Yes.

1931. (*Chairman.*) I want to get your view quite clearly. Figure No. 1 represents the chock screening the wick, in a line parallel with the keel, from the outer edge of the wick. No. 2 represents the same thing, with the chock screening the inner edge of the wick. Do I understand you to say that you would be satisfied, practically, with the screen as represented in figure No. 2; that is to say, a line drawn parallel to the inner edge of the wick?—To the inner edge? Yes; it gives the full light.

1932. Of course, if you have it screened as in No. 1, that is to say, the line drawn from the outer edge of the wick, and the whole wick covered, then there is not a full light shown ahead?—Quite so.

1933. And you appreciate the value of the international rule which says that it is the full light which is to be shown ahead?—Yes.

1934. (*Rear-Admiral Andoe.*) Have you witnessed any experiments which would enable you to form the opinion you have expressed regarding diffused light?—I have not had the opportunity of following out that experiment.

1935. Have you made any special study of optics which enables you to speak with authority as to the theories regarding them?—It is very easily demonstrated as far as optics are concerned. If you see two lights which appear very close together on the water, you find when you arrive at those lights that they are really very far apart.

1936. You do not understand me. Have you studied the question from that point of view?—I have told you already I have not done so.

1937. Is it not the duty of every officer and captain of a steamer to use night glasses, and are they not generally in use by them?—Oh, yes, we have the best we can get.

1938. I mention that because you refer to trusting the look-out man's eyesight?—Yes; but at the same time I said it was not a fair thing to do to judge by the look-out man's eyesight. We have good night glasses—the best we can get—therefore we are able to see further.

1939. You said just now that you thought that the side lights ought to be tested experimentally?— I did, in the chock.

1940. To prove that they are properly placed?—I think so, at night.

1941. Do you think that is practicable in the crowded docks, considering the limited space in which these vessels are?—There is nothing impossible in it if you have got a good long dock, such as the Albert Dock.

1942. In a crowded dock full of shipping and of limited space, would it not be impracticable?—You could take the centre. It was demonstrated according to a letter I saw some time since about the screening of one of the steamers. I do not know whether it was at Cardiff—one of those places—and they were supposed to be screened to 4°, and at night time the lights were lit and shone on to the sheds, and the angles were taken very carefully, and one showed 13° and the other 14°. I can quite follow your meaning.

1943. You gave just now an instance of a ship approaching you 4 points on the starboard bow, which put her helm hard a port and altered across your bows, and then put her helm hard a starboard, and run back again. You did not, I suppose, refer to that in any way as affecting the position of the screening of the lights?—Oh, no, I say it had nothing to do with the screening of the lights ordinarily. I said that was a thing you have to meet in the Channel. I said that with side lights crossing the bows and with a man of that description, if they had a good light, that they would put their helm hard a port.

1944. It did not bear upon the question of the screening of the side lights?—Not at all. I did not say it did.

1945. Do not the majority of the steamers coming up the Thames, in the narrow channels of the Thames—I mean from the Tongue light up—usually come up in charge of pilots?—All the coasting steamers, such as steamers coming across from Amsterdam and Rotterdam, and Calais, they are not in charge of pilots, as a rule.

1946. There is no local rule by which they are obliged to take pilots up as far as Gravesend?—No, but there ought to be one right up as far as Gravesend.

1947. What is the regulation now. Cannot a steamer approach as far as Gravesend without a pilot, if he chooses?—Between Brest on the one side and the North channel on the other, which really now means the Baltic, they can now navigate up without a pilot.

1948. (*Captain Castle.*) They call them exempt ships?—They call them exempt ships.

1949. (*Rear-Admiral Andoe.*) And they come up as far as the Nore without a pilot?—Yes, as far as Gravesend.

1950. Any ship?—Not any ship, only ships exempt from compulsory pilotage.

1951. What are the exempt ships?—Any place between Brest on the one side, and say the Baltic on the other side. If you come from any place there you are free.

1952. And it is the practice of those ships to come up without a pilot?—Yes, as a rule, I should think it is.

1953. (*Mr. Bolam.*) When you speak of the diffused rays crossing 3° in addition to those from the wick, are you speaking of what you saw, or is that hearsay? Have you seen the diffused rays, or is it only hearsay?—No, I have not seen them. I am only giving you my own judgment.

1954. (*Captain Thomson.*) There is one thing I should like to make clear. I understood you to say that there are some men in charge of ships that you had met in the river and the channel and approaches, who port their helm to a green light very often, or a glimmer of a red light on the starboard bow, as well as the green. I also understood you to explain to me that you thought in the case of a green light being seen fine.—It is the most dangerous thing you can see.

1955. That if the screening had been broader they would have ported of course, but they would have seen both lights, instead of the green only?—Yes.

1956. But then, you would have ported also; no doubt in that case?—No doubt. If I had seen what he had done—you know we do not come close together. Before anything of that kind arises people either port or keep their course, as the case may be, long before they meet each other. If the vessel ported her helm I should be compelled to do so to keep clear of him.

1957. If a man ported to your green light seen fine, of course you are not bound to port. You might starboard, might you not?—I would stop if there was any element of danger at all.

1958. But there is nothing to prevent you starboarding?—Supposing I had?

1959. If the lights were screened broader, he would port as before, but now there is no question as to what you would do; you would also port, and, therefore, there would be no danger?—I quite follow you.

1960. Therefore, do not you think that this question of porting to a meeting vessel showing a green light only has to do with the screening of side lights? In the one case, you see, there is doubt when they are screened fine, and in the other case, when they are screened broad, there is no doubt?—I apprehend that the trouble and care you are taking is to modify collisions, and to bring about a better state of things than has hitherto existed; and you will have the thanks of all the pilots in the matter.

1961. But I should like to make it clear that when a man ports to a green light seen fine, or a green light with a glimmer of the red light, the question of screening comes in, does not it?—I think so.

1962. (*Sir E. Harland.*) There is one thing I should like to refer to, with reference to the sinking of the "Elbe." It was mentioned at the time, I think, that these big powerful ships were disinclined to give way to smaller ones coming up in close proximity. That the custom with the big steamers, especially continental steamers, was not to give way, but to expect the small craft to do so. I am not referring to the custom with regard to British ships. But what is your experience upon that point? Have you found the large and powerful ships look to the smaller craft giving way to them, or that each, be they big or small, considers it her duty to obey the rule of the road?—No, we keep away. Are you alluding to the British India boats?

1963. No, not to anything in particular?—Very well. We do our best to keep away. If there is only a little jollyboat 10 feet long we keep out of its way.

*Mr. G. H. Little.*

9 May 1895.

Mr. GEORGE HERBERT LITTLE called and examined.

1964. (*Chairman.*) I think you are a master mariner, are you not?—Yes.

1965. Will you tell me what your experience has been?—I have had about 14 or 15 years in all kinds of steamers, in sailing ships, and up to chief officer in cable steamers and tank steamers, and in fast mail steamers out in the East.

1966. How long were you master?—I have not been a master. I say as far as chief officer.

1967. You say you have served in all classes of vessels?—Yes; and in the last few years I may say I have been very much connected with the trial of steamers, such as torpedo and mail steamers, and I do a lot of compass adjusting. Therefore, I am in a very good position to see a good deal of shipping which I should not see if I was simply at sea.

1968. And have you had to do with the navigation of ships, both in open waters and in narrow waters?—Oh, yes, considerably.

1969. Before the present Board of Trade 4° rule, what do you think—from your experience—was the screening of the side lights of vessels?—Well, sir, it is hardly a question of experience so much as one of actual fact. The actual fact is that these rays always have shown across the bows. It follows, as a natural consequence, from the shape of side lights, that the rays must cross, and ought to cross.

1970. To what extent do you think the rays have crossed?—Perhaps this illustrates it better by showing you the crossing. [*The witness produced a diagram, which he explained to the Committee.*]

1971. You will agree, of course, that, unless the chock is kept within the line of the inner edge of the wick, that you cannot see the full light?—No, you cannot see the full light; you can see the secondary rays. It is hardly the correct word to use, but it is difficult to find a better one—obscure rays, perhaps.

1972. What sort of power have those rays; at what sort of distance would they be seen?—I have made some experiments, but not sufficient to be of any value, and I really could not say; but I know this much, that if you stand very close to the bows of a ship you will see the different rays quite close to the stem; in fact, last summer, when this question was agitated, I stood at London Bridge and saw a very small dark lane indeed, a few feet before the stem of the ship. This plan is supposed to show you the lights as screened according to the old-fashioned rule.

1973. (*Mr. Bolam.*) Will you kindly tell us what you mean by the old-fashioned rule?—That is, with the chock coming out when the rays of light are parallel with the keel [*describing*]. There is another point I should like to mention with regard to seeing the rays of light abaft the 2 points—that is, the case which occurred in the disaster of the "Elbe." There you have a case in point. The "Crathie" ran into the "Elbe" because these lights did not extend far enough abaft. It is a help to a steamer to have the rays showing 2 points abaft, and I suggest, instead of having the side lights limited to throwing the lights 2 points abaft the beam, it should be more than that. Had the light been thrown 4 points abaft the beam, the "Crathie" would have seen her.

1974. There is a stern light, is there not, and the ship is really lighted all the way round?—That is hardly so in those large mail steamers.

1975. (*Chairman.*) What we wanted was your opinion about the Board of Trade rule; do you think it is a good rule?—No, I do not think it is, because when you have the two side lights in view it indicates one fact, that the vessel is coming straight for you. If you have the 4° rule, it is quite possible to see, not only one side light, but also the other, and you lose the whole distinctive value which you have of seeing two lights ahead. For instance, supposing I see a steamer's red light a little on my starboard bow, that vessel may be going anywhere on the opposite bearing and 10 points to the right. Suppose I just see a scintillation of the green light, she appears to be coming for me when she is really crossing. If I see both lights full, I know she is coming dead on to me; but supposing I see the red light and also the faint scintillation of the green light, it shows me she is not coming dead for me.

1976. Do you think that the screening should be arranged so as to prevent the rays crossing as much as possible?—Yes. If you follow the logical conclusion of Article 3, you cannot fix the side lights at present so that the rays do not cross.

1977. Clearly not. I think we are agreed just now that if you are to have a full, uniform light of 10 points, the rays must cross; but I want to know what your view is—whether you think the crossing should be as little as possible, or whether you think something should be adopted to make the 4° angle, larger?—I think the angle should be as little as possible. I think it should not be more than one or two degrees.

1978. Do you think any danger will arise from having the lights screened as fine as that?—Yes, I do; because, if you have the lights diverging, it is difficult for an observer on another ship seeing those two lights to say exactly where they are.

1979. You are not quite following the question. I understood you to say you thought there was danger in having the lights screened to as much as 4°. I was turning it the other way. Supposing they were screened fine, do you think that that causes danger? You know it is suggested by the Board of Trade that it does?—Yes; I understood you to refer to the lights being screened finer than 4°. I do think it is less danger then [*describing with the plan*].

1980. So you mean there is a larger area over which a vessel is not certain what the course of the other one is?—Yes.

1981. As regards the area of screening, it does not matter in your judgment, does it, whether the screening is from the outer edge of the wick, or the inner?—The screening from the wick, is an incorrect and unsatisfactory manner of screening—the wick ought to be circular.

1982. What rule would you like to suggest for screening?—I should say, if it were possible to devise such a thing as I think might be done, in time, that it should be in accordance with this diagram [*describing*].

1983. (*Mr. Bolam.*) Do you mean to say that you find a light where the wick is placed end on as strong as it is where the wick is placed broadside on?—No, I did not say that.

1984. How did you perform your experiment. If you performed it in the same way as I did, it will make your evidence of value?—But common sense tells you.

1984*a*. It is a dangerous thing to introduce common sense into optical experiments.

1985. (*Rear-Admiral Andoe.*) Might I ask if you have conducted any experiments?—Yes.

1986. On a large scale?—On a rough scale.

1987. Only on a rough scale?—Only on a rough scale.

1988. You have not gone through any very special training in optical matters?—Well, I was an engineer once with a firm in a large way in London—electrical engineers—and I had a lot to do with it.

1989. Have you ever been a captain of a ship?—No, never.

1990. What ship were you officer of?—I was chief officer in one of Captain Thomson's ships—in a cable steamer.

1991. How long have you served as chief officer?—For five years.

1992. (*Chairman.*) In your view the dark lane is not a matter really to be regarded?—No.

1993. But do you think any danger is likely to arise from the dark lane?—No, the dark lane has always existed, only seamen, as a rule, do not appreciate it.

1994. If you followed the screening of these lights, what system would you adopt?—I should put the lights' screens amidships (*describing on the plan*).

1995. (*Rear-Admiral Andoe.*) You would put the lights back to back?—Yes.

1996. (*Chairman.*) Your recommendation, as I understand it, is that there should be a complete change, and the lights should be put close to one another in a tower on the fore part of the ship?—Yes.

1997. (*Mr. Bolam.*) In sailing ships?—In sailing ships, no, because the speed is not so great in sailing ships, whereas the speed of steamers is increasing so greatly. I have seen it myself in torpedo boats. As the lights are screened, they do not give sufficient indication of what you are going to do.

1998. (*Chairman.*) However, what I understand is, you attach importance to uniformity in the lights which you see ahead?—Yes.

1999. And, therefore, if either of the two have to give way, you would say that you should see the lights ahead?—Yes.

2000. Even if you have to sacrifice to some extent the crossing?—Yes. I do not know whether it is necessary to show that; but I have another tracing which I have prepared [*produced*].

2001. (*Sir E. Harland.*) You have referred to having the red and green lights set back to back somewhere on the forecastle head?—Yes.

2002. Although probably 200 or 300 yards just immediately ahead of the ship you would not be able to distinctly define one light from the other. Suppose you were a mile away, do you think the two colours would be still as distinct?—No, the secondary rays in that case would pass also, but in that case it would be necessary to have the light screened out.

2003. But you think you would see a distinct red light and a distinct green light?—Undoubtedly. For instance, if you are on a railway, you can see the red light of a locomotive four or five miles, at the very least.

2004. But not two lights close together?—The red light.

2005. But here is a case of a red light being close to the green light?—Yes, but that leads me to another point [*referring to the diagram*].

2006. But, then, do you hold that at a considerable distance, a mile or two miles away, you would still be able to distinguish the colour, a defined light?—I do not see why you should not.

2007. Have you ever tried it?—No, I cannot say that I have.

2008. Then, theoretically, do you consider you should be able to see it?—Yes.

2009. But practically you do not know?—I do not see that it is a question which needs much practical demonstration.

2010. I am asking you the question, whether you can give me an answer from actual experience?—I think we attach too much value to this question of practical experience. It is not that; it is a question of scientific fact.

2011. But is not a scientific fact a question of practical experience?—I think not.

2012. (*Mr. Bolam.*) Do you really believe that your practical experience in this matter is of any value?—Oh, certainly, because certain practical experience is dead against what I have been saying this afternoon.

2013. But you would agree that all these matters ought to be subject to rigid experiments?—Exactly.

2014. And that those experiments ought to be properly conducted?—Yes, exactly.

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## Wednesday, 15th May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

Captain JOCELYN FITZ-GERALD RUTHVEN called and examined.



2015. (*Chairman.*) You are the commander, I think, of the steamship "Ophir"?—Yes.

2016. What line?—The Orient Steam Navigation Company.

2017. In 1892, after the Board of Trade issued the new rules as to screening, I think you formed one of a deputation to the professional member of the Marine Department of the Board of Trade?—Yes.

2018. I think it was your object, was it not, to protest against this new regulation, and point out what you considered the dangers involved in it?—Yes.

2019. What did Sir Digby Murray tell you about it?—Well, he told us that, so far from it being an increase in the angles of convergence it was practically a decrease. That the angles of convergence up to that time had been very irregular indeed, and that the average angle of convergence up to that time was greater than this 4°, and he referred to the proceedings and recommendations of the Washington Conference, and also to his own experiments at Shoeburyness and elsewhere, and commented on our having no experiments to go upon.

2020. That was the fact, that at that time you had made no experiments?—I had made no actual experiments or measurements, but I knew that the chocks of the sidelights in my own steamer, which were fitted exactly the same, as nearly as possible, as the steamer which I had commanded previously, had been cut away so that the side lights should show across the bows very much more than they had ever done before in any of the steamers I had been in for many years; and I foresaw the great danger that would arise in navigation—that it would increase the risk of collision, and also that it might drive other vessels on or unpleasantly near some danger on the starboard side, because another steamer, seeing my lights with that broad angle of convergence (a sector of 8°, in which both lights were visible), would not know whether she was right ahead of my ship, or on my starboard bow, or on my port bow. To indicate this was one of the principal objects—perhaps the sole object—of the regulation that the side lights should not show across the bow.

2021. What, as a matter of actual experience in going down the Thames, or the English Channel, or along the coast of Spain, or elsewhere, did you find to be the result of the new rule?—We found that a large number of vessels that were on our starboard bow and that in daylight would have passed on that side ported their helms, and ran across our bow.

2022. In a crowded thoroughfare like the Channel, should you regard that as a source of danger?—Most assuredly.

2023. On one voyage I think you made certain experiments and calculations, did you not?—I did.

2024. And you embodied the experiments and the results of them in a paper in "The Nautical Magazine," did you not?—I did, and I subsequently wrote two more articles in the "Nautical Magazine" on the same subject.

*Capt.J.Fitz-G. Ruthven.*

15 May 1895.

2025. I think it would be convenient if you could give me at once the date of those articles?—The first one was in November 1892, the next one was in March 1893, and the last one was in June 1893.

2026. The conclusion which you expressed in those articles in effect was, I think, that the angle should be reduced to 2°, was it not?—In the first article that I wrote, I said 2°, fearing from what Sir D. Murray told us of the proceedings and recommendations of the Conference, that to get a larger reduction was hopeless. But the more I have studied this question, the more impressed I am that it is necessary to reduce the angle as much as possible to the very minimum that will fulfil the condition of the two side lights being seen ahead together in time to avert collision. The finer the side lights are screened to fulfil that condition, I think the better they serve the purpose for which they were introduced, and the more they reduce the risks to navigation.

2027. You speak of the lights being seen ahead. Do you also attach importance to the rule which directs that the full uniform light should be seen round 10 points?—I attach very little importance indeed to the fact of a full light and a uniform light being seen ahead except at long distances; the full power is not necessary at half or three-quarters of a mile. As long as the light is seen ahead, I think that is for all practical purposes of navigation quite sufficient, and it is very detrimental and risky to navigation that the lights should show so much ahead as to be seen across the bow of the vessel.

2028. So that if one or the other thing had to be sacrificed, I rather gather your view is to sacrifice complete uniformity over the 10 points than admit of the lights crossing?—Most assuredly and emphatically.

2029. When you spoke in that article you refer to of reducing the angle to 2°, I think the result of the Washington Conference had a certain effect on your mind, had it not?—Well, Sir Digby Murray, when he received us in deputation, attached great importance to the proceedings of the Washington Conference in support of his 4° angle. But when I read the proceedings of the Washington Conference for myself, I thought he misinterpreted their view, and I did not think it was debated from a navigator's point of view; the angle named in the resolution passed at the Washington Conference was in every sense a restrictive angle, whereas Sir Digby Murray's is a compulsory deviation.

2030. I think that your view rather is, is it not, that the half-point angle adopted by the Washington Conference was an error made at by the German Naval Delegate, owing to his doubling the angle which he professed to arrive at from a translation of an old English Board of Trade pamphlet?—Yes, there is no doubt about that. It is clear from the proceedings of the Conference that he doubled the angle. The crossing point that he named, viz., 10 times the beam of the vessel ahead, gives an angle of half a point as the *sum* of the two convergences, or the angle the most convergent port ray makes with the most convergent starboard ray; he doubled it by making *each* convergence half a point and the sum a whole point.

2031. In the past, when ships were smaller and slower, do you think that the importance of lights not crossing was so great as it is now?—I do not think that it was nearly as important in the old days of slower ships, carrying lights that only just complied with the law as to range.

2032. So that you think the importance of screening has increased in recent times, as ships have got bigger and faster?—Increased, yes, certainly.

2033. Before the Board of Trade Rule of 1892, do you think that practical seamen entirely understood what the angle of screening actually was?—I do not think they understood, or ever measured, or hardly ever, until quite lately, measured the angle of the most convergent ray at all. They screened the inner ray, the ray from the inner edge or the centre of the wick as nearly parallel as possible, and the ray from the outer edge converged and crossed so that the two lights showed ahead, and they thought that a sufficiently practical and proper interpretation of the Rule.

2034. I think that the old practice, in your view, was to have the line joining the inner edge of the wick and the outer edge of the chock parallel with the keel?—Yes.

2035. Your view would be, would it not, to give about one degree to two degrees convergence for the ray from the outer edge of the wick?—Yes, from one and a half to two degrees, according to the construction of the lamp and the width of the wick.

2036. You know it is said that there is a misprint in the paragraph of the Board of Trade Instructions of 1875, which directs screening from the inner edge of the wick, a misprint of *wick* for *lens*; but as the lamps were made, do you think there was any material difference between a screening from the inner edge of the lens and the inner edge of the wick?—I have been informed, I forget by whom, that Sir Digby Murray said that there was a misprint there, but in all the diagrams and the instructions to surveyors the two lines are practically identical (*i.e.*, the line joining the inner edge of the wick and outer edge of the chock cuts the inner edge of the lens), as far as the scale of the diagram will admit. I believe that in some lamps, constructed by careless or ignorant makers, the two lines would not be at all identical, but in the best lamps they are.

2037. In your view, what is about the maximum convergence ought to be allowed?—I think that is quite the maximum, and efforts ought to be directed towards reducing instead of increasing it, while maintaining efficiency.

2038. Would there be less objection to convergence with lights of low power than with those of longer range?—Yes; because the further the lights show, the greater the length of the chord of the sector in which both lights show. At 7 miles the chord of the sector with 4° convergence is a whole nautical mile across, and that is what the vessel might have to port. If she is about 4° on the starboard bow of another ship she has to go the whole nautical mile to starboard (to the right) to shut out the green light, as she is bound to do by law. If the lights are screened to an angle of only one degree, she has only to go a quarter of that distance. In the Red Sea, Mediterranean, &c., modern side lights are often visible seven miles, and sometimes even 12 miles.

2039. You will agree, in a certain sense, that uniformity of practice is desirable?—As far as possible, I think uniformity is most desirable.

2040. But you would not be prepared, I understand, to sacrifice to that uniformity what you consider the desirability of the lights not crossing?—The less the lights show across the bows, provided they can be seen ahead, the better for all purposes of navigation; and so I should rather sacrifice a little uniformity than sacrifice the other object and allow the lights to show across the bow.

2041. You feel a difficulty, do you not, in attaining absolute uniformity, having regard to the different illuminants in use?—There always must be some slight difficulty, more theoretical perhaps than practical, because of the difference in width of the wick.

2042. The electric side light, in your judgment, gives better results in this respect, does it not, than the more old-fashioned lamps?—Because the width of the wick is a factor that has to be taken into consideration. In all the electric side lights I have had—I have not seen a great many pairs of them—but all I have seen in my two last ships, not only my present ship, but on the previous one, the "Austral," if you look at the side lights from ahead, instead of there being breadth to them like others or width, it appears like a thin vertical line in the lens, and the moment the chock crosses that line the light is cut off.

2043. I think you were speaking just now of the difference between the effect of visibility at a greater distance and a less distance, because there is some difference in the result according to the power of the light employed?—I do not quite understand.

2044. I mean that according as you employ a more powerful or a less powerful light, if the rays cross, the greater the distance is to port or to starboard to which the area of double light is extended?—Yes, because the sector in which the lights are visible has a different length of chord; the chord of that sector increases in direct proportion with the distance. At 8 miles the chord would be double what it would be at 4 miles, or four times what it would be at 2 miles.

2045. In the case of lights of low power, I think you go so far as to say that you do not see any objection to the depth of the chock being increased rather than reduced, even if the full power of the light would not be seen ahead?—Personally, I do not see any objection at all, unless it is not in accordance with the International Rules, because if the light is visible—if that vessel's full light is visible at two miles there will be quite sufficient visibility at the crossing point, even with 1° convergence, to make that light perfectly well visible.

2046. There are places, are there not, for instance, the upper end of the Red Sea and the Mediterranean, where side lights of vessels are seen at considerable distances?—In places where the atmosphere is frequently very clear—clearer than it usually is about the coast of England—like the Mediterranean and the upper end of the Red Sea (and this is also emphasised sometimes by extraordinary refraction), I have seen the side lights of vessels as soon as they come above the horizon, 12 miles off. I have often seen some of our side lights and some of the side lights of the P. and O. and some other good lines going to the East 12 miles off. We have taken the time the lights have been first sighted and the time the vessel carrying them has passed us, and you can easily estimate the distance off when first seen.

2047. What lights are you referring to as seen at that great distance, oil lights or electric?—I believe both: electric, 12 miles; the best oil, 6 to 8 miles.

2048. I think you worked out a table showing the length of the chord of the sector in which both lights would be visible with 1° of convergence and 4° of convergence at distances of 2 to 12 miles?—Yes. The 4° chord is practically exactly four times the 1° chord, so that you have got to go four times the distance. If you are just on the starboard edge of the sector, you have to go four times the distance with a 4° convergence to shut out the green light—and you never know you are safe until you do that—you have to go four times the distance with a 4° of convergence that you do with 1°. Perhaps you have no sooner done it for the first vessel than you have to do it for the second, and no sooner for the second than you have to for the third, and you might go on doing that *ad infinitum* with a great number of lights coming up the Channel.

2049. You know it is said in answer to the objection you are urging that the rules are made for open sea and not for rivers and narrow navigation. What do you say about that?—I think it would be absolutely unworkable in practice to have two sets of rules. Who could say where one left off and the other began, and this question would have to be settled for every river which vessels navigate. It would be impossible, it would be absolutely unworkable. Besides, all the objections that I and others have urged against the 4° of convergence in places like the Thames and Mersey are equally applicable to the Downs and the English Channel, or any places where ships congregate together, such as the coast of Spain. You sometimes have as many vessels off the coasts of Spain and Portugal—at St. Vincent, for instance—as you do anywhere else, or off Tarifa.

2050. In crowded waters the effect is practically the same as in narrow waters?—Exactly, and there can be no possible reason for having two sets of rules.

2051. I think that you have a chart showing what the effect would be at a particular place, a place near Tarifa?—Yes, and this is only a typical example, and applies to hundreds of other places.

2052. I think there are some instances which you are able to mention in the course of your experience. There is one I think you mentioned in your article in the "Nautical Magazine" for June 1893. Will you tell us what that case was?—Well, that was the case of two steamers meeting in the Back Stairs Passage near Adelaide. In that article I did not mention their names, I do not mind mentioning them now. One was one of the Pacific Company's steamers, and the other was one of the French Messageries Company's mail steamers, and these two steamers met in the Back Stairs Passage. The French captain gave me an account of this himself, that he saw the English ship's green light and thinking that his green only would be visible from her bridge told the officer of the watch to starboard a little, to give her a little wider berth, than if they were passing port to port, and he went into the chart room. Immediately after that he heard his helm being put hard over, and when he went on the bridge to see what was the cause of it he found his own ship was turning round with her helm hard-a-starboard, and the English ship turning round with helm hard-a-port. He could not make out what was the cause of this extraordinary manœuvre, as he described it, on the part of the English vessel, until he found out on further examination that his own side lights were showing across, and that the English ship seeing his red side light across his bow had ported her helm. His helm was at the moment just a little to starboard, and it was too late to shift it a-port, and there was nothing to do but to ram it hard-a-starboard, and each ship made a complete circle, one to starboard and the other to port and then passed port to port

2053. Of course there was plenty of room, but do you think there would be danger in doing that manœuvre in narrow waters?—I think it would be most dangerous in the English Channel in narrow parts of it with lots of vessels about, or in *any* place where there is much shipping.

2054. I think you have been told by the captain of the French steamer that, in his judgment, at any rate, it arose from the red side light showing across?—Yes, and he told me a few years before one of the Messageries steamers had sunk another off Barcelona, and he believed it was because one of the red side lights was showing across the bow, and after this and what occurred in the Back Stairs Passage with one of our ships he wrote a very strong letter to the manager in Marseilles, pointing out the dangers that might be the result of screening side lights in that way, showing across the bows, as they were never intended to do.

2055. I think you are inclined to think, are you not, that something of that nature might have been the cause of the collision between the "Alvah" and the "Brinkburn" in the Straits of Messina?—I believe that was the cause of that collision; the two steamers were approaching one another on such courses as they would pass starboard to starboard.

2056. (*Sir F. Evans.*) At night time?—At night time. And the one that was coming from the northward, I think it was, took a sheer against her starboard helm not sufficient to show her red light, if it had been screened finely, as I contend it ought to have been, but as her lights were screened so that her red light showed across the bow, the other steamer, seeing it, immediately ported. Just as she ported, the first one, which had taken a sheer against her helm, began to answer her starboard helm, the two ships came into one another. I do not know which went down. One hit the other, and the one that was struck went to the bottom.

2057. (*Chairman.*) I think there was another collision in 1893 in the Thames between an English and a foreign steamer which you attribute to the English ship's red light showing across?—Yes, there was a collision off one of the docks in one of the upper reaches of the Thames. This English ship was going to dock, and the foreign steamer was coming down, and our senior Trinity House pilot told me that he heard from the piermaster they could see this English steamer's red light cross the bow, and although he signalled by whistle he was starboarding his helm, still the other steamer seeing his red light paid no attention to it, and ported his helm, and there was a collision. Luckily the ships had both very little way, and there was not much result from it.

2058. Well, not to go into more cases, I think there are other cases as well that you have heard of where this crossing of the lights has been a source of danger?—I am quite sure of it. I have seen so many steamers cross my own bows unnecessarily to begin with; not long ago, when this Rule first came out, one of our ships was leaving Plymouth, and one of the Pacific Company's line was approaching it on diametrically opposite courses in the dusk of evening, and they were approaching one another in such a position that they could pass starboard to starboard in daylight if they liked, but one steamer had just had her chocks pared away by the Board of Trade and her red light showed across her bow to the Pacific ship which then ported across her bow, fortunately, of course, there was a good look-out kept and no collision occurred. It was no fault of the officer of the watch, it was the way the side lights were fitted.

2059. Now, reverting for a moment to the Washington Conference, the rule they recommended was a restrictive one; it prescribed a limit which was not to be exceeded?—Yes.

2060. And you lay stress upon the fact that the Rule of the Board of Trade is an absolute Rule, viz., 4°?—The Washington Conference angle was a restrictive angle, and if they had had the benefit of the discussions that have lately taken place I think they would have restricted it very much more still. Sir Digby Murray's, on the contrary, is a compulsory deviation from parellelism exceeding the intended maximum of the Washington Conference by a degree and a quarter—1·2°.

2061. Now, what is the opinion (in your judgment) of the sea-going members of the nautical profession generally on this subject?—Well, I have talked this question over with a great many men in my own profession, a great many men in the navy, navigating officers in the navy in active service, and several of the Messageries' captains, and I have heard from our pilots the opinion of the German captains in the Atlantic service, and also in the North

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German Lloyd steamers going to Australia, and I have never heard one. I think, yet that did not absolutely condemn the Rule, and I have letters in my possession from some of them saying so; condemning this angle of convergence in the most unqualified terms.

2062. I think you have heard as an argument against that view, that it is necessary in very hazy or foggy weather for both lights to be seen a short distance ahead in case of another vessel where only the most prompt action on the part of the officer on the watch can avert a collision; what do you say to that argument?—That was Sir Digby's Murray's argument to our deputation in support of it; but I say in a case like that it is too late to trust to side lights. You have not time to look whether there is one or two the best thing you can do if you get in such close proximity as about a third of a ship's length ahead is to go full speed astern, and the ship ought to be slowed down; that is the only thing you can do. I do not think that you would ever avert a collision if you were in such close quarters by means of side lights. In my ship it would be one third of the length ahead.

2063. As to the theory of dark lane which has been suggested, do you think that is a practical objection to fine screening?—No, I do not think it is any objection at all. I do not think you can produce a practical dark lane without diverging screening, and nobody yet that I know of has recommended that. With the fine screening I recommend, 1°, there would be no dark lane; I question if there would be one with even absolutely parallel screening.

2064. You are speaking of 1° from the outer edge, I presume, not 1° from the inner edge of the wick. The Board of Trade 4 is 4° from the outer edge of the wick?—Well, I say 1° from the centre of the wick. Most of my experiments and calculations have been made from my electric side lights, which have practically no breadth at all, and to make that conform as nearly as possible you cannot get absolute uniformity with so many different kinds of lamps and illuminants—I should take the centre of the wick. There is always a little light, too, from the outside of the lens, which in very close quarters would prevent a dark lane.

2065. I think it was pointed out to you, was it not, by the officials of the Board of Trade that some statistics showed that 4° of convergence was about the average of previous practice. What would you say to that suggestion?—Well, I got these statistics and dissected them for myself, and I found, whether by accident or design, that nearly all mail steamers and vessels of the best class, which would have powerful side lights, were left out of them. They were nearly all either cargo steamers or sailing vessels. In the Liverpool list, there were four Cunard steamers; they were the only ones that I could see that were mail steamers at all. In the London list there were a few more, but five of those in the London list had their lights screened parallel, and the others were from 1° to 3½°. The whole of our fleet and the Pacific Company's fleet, where the chocks had been pared away (I have this on the authority of our marine superintendent and Captain Conlan, Marine Superintendent to the Pacific Company) there was nothing said about them, There was nothing said about the P. and O. ships, (with a few exceptions in which the angle was less than 4°) which were altered previous to that measurement. I felt they were altered the wrong way, according to my argument. They were not altered to decrease the angle, they were altered to increase it.

2066. In your opinion there were whole fleets of steamers, of which yours was an example, where the angle of convergence was only about a degree?—Yes; I did not measure them all; I know they were all done on the same principle, and my own was a degree or a degree and a sixth exactly. I calculated it, to be accurate, from the shadow thrown by the side lights on the screen, the shadow of the chocks on the screen; then, when I actually measured the crossing points with the lead line in port afterwards, they agreed within 7 or 8 feet.

2067. You are speaking now of the electric light?—The electric light.

2068. I think you regard the question, as a practical rather than a theoretical one?—Yes.

2069. Now, I want you to tell us shortly the view you take of the regulation. The regulation says the side lights shall show from right ahead to two points abaft the beam, and not show across the bow. Do you think it reasonable to suppose that that should be interpreted to mean that the light should be shown immediately in front of the stem?—I think that a most unreasonable view, because if that were once admitted you could place the side lights in towers well forward where they would show three or four points across the bow, which would be an enormous infringement of the other regulation that the side lights shall not be seen across the bow.

2070. I gather that the reasonable interpretation in your view is that the phrase "right ahead" means ahead of the stem at such distance as will avert collision, and yet fulfil as nearly as possible the other condition of not showing across the bow?—Yes; I think that the only reasonable interpretation—makes the two views dovetail into one another.

2071. You will admit that there must be some limit of error to the angle of keel in practice?—There must be some limit of error.

2072. And do you think that limit might be put at 1°?—Yes, I think 1°, with electric side-lights, is as large a limit as ought to be allowed, but for the sake of uniformity—if it is considered that it is absolutely necessary to fulfil the law, that the full power of the side-light should show ahead—then we might allow a little more, as little more as possible, with side lights that have wicks.

2073. (*Captain Wilson Barker.*) That is to the centre of the wick, I suppose?

2074. (*Chairman.*) I think Captain Ruthven is speaking of all wicks in speaking of the centre of the wick?—I take the centre of the wick to correspond with the centre of the electric light, but as the electric light has no breadth practically, there would be slightly more convergence with the oil lamp which has a wick, and if the wicks were always thrown back at an angle of 45° instead of, as they are sometimes, at right angles it would subtend a smaller angle from any position ahead, and allow the side light full power on the side without making the converging angle so large across the bow as if the light was at right angles to the keel.

2075. Then, may I take it as a summary of your view that with oil lamps the convergence ought not to exceed 1° from the centre of the wick?—Yes, and for electric side lights too.

2076. And from electric light 1° from the light itself?—I think that would be the best solution of the difficulty, and that would be quite satisfactory to everybody who advocates fine screening and uniformity. I think that 1° of convergence is as much as ought to be allowed with the electric side light, which is the most powerful light, and that to assimilate that to steamers that burn oil, we might very well take the same convergence from the centre of the wick where oil lamps are used.

2077. (*Mr. Bolam.*) That is 1° from the centre of the flame?—Yes.

2078. I thought you said 2° to the Chairman?—No, 1°. That will make a little more convergence from the edge of the wick.

2079. (*Chairman.*) The outer edge of the wick?—Yes, when that question was first brought to notice by the action of the Board of Trade in their desire to increase the angle, I think the time was fast approaching when that angle would have had to be reduced in any case. I mean the broad screening, the irregular screening that was allowed, and sometimes broad angles. The American frigate brought forward at the Washington Conference as an extreme instance had a convergence of 1¾ points, about 20°.

2080. I should like to ask you this, as you have mentioned the centre of the wick; does it appear to you important, apart from the question of amount, which, of course, would vary, whether the point of screening be the centre of the wick in a case of oil lamps, or the outer edge of the wick; do you think it matters which you screen from?—It would make a slight difference.

2081. I know, but I was allowing for the necessary difference. But as a point from which to screen—apart from the question of angle of convergence—do you think it important to take the centre of the wick rather than, as the Board of Trade rule at present does, the outer edge of the wick?—The Board of Trade, as I understand, at present screens from the inner edge to the wick.

2082. No, from the outer?—They calculate the angle of convergence from the outer edge, and my proposal is that the line joining the centre of the wick and the edge of the chock shall make an angle of 1° with the plane of the keel.

2083. That is what I meant, the outer edge of the wick. You suggest, as I understand, that the angle should be calculated from the centre of the wick?—That is to

assimilate it as nearly as possible to the electric side light, and it would allow a little more convergence from the outer edge of the wick in oil lamps, and as oil lamps have not got quite the same range as the electric light, that slight extra convergence, I think, might probably not be harmful, and would tend to make the other condition fulfilled, of allowing more power to the light to show ahead; although, personally, I do not attach much importance to that—very much less than to the light showing across.

2084. Of course the objects, as I understand, of these side lights are mainly two: showing the course of the vessels and alterations in it, and also enabling the rule of the road to be carried out at night as well as in day light. Now do you think that those two objects are best attained by fine screening?—I think so; in my own mind I feel perfectly sure of it.

2085. I think, beyond this, you wish to offer a further suggestion, which goes rather beyond what we have been speaking of hitherto, as to a compulsory position for the side lights of steamers as regards the mast-head light of the vessel. Do you think it important that the place of side lights of the vessel should be determined?—It is not so important as the screening, but it is very important as indicating the course that a vessel is steering and the alterations in it. If you see a steamer steering across you not exactly at right angles but at an oblique angle, and you know that her side light is placed so that if she were broadside on the line from the mast-head light to it would make an angle of 45° to the vertical, the side light is in a first rate position for showing you any alteration in her course, not only the course she is steering, but you can see any alteration in her course. If it is placed at the same angle forward it will also indicate the alterations of the course; but in certain places last winter, like the Atlantic, where the ships had to dig their anchors out of the ice, I should say that would be a very bad place for the side lights. They might be covered with a coating of ice, or might be partially obscured by continuous showers of spray when the vessel is pitching even in ordinary temperatures, so I think further aft is a very much better position in that case for the side lights, and I would like to see them uniform. I should like all vessels to have them abaft; but beneath the mast-head light, (in the same vertical plane) I think, is one of the worst places in steamers whose foremast is very far forward; the forward position for the side lights is unattainable except by placing them undesirably near the stem and in some cases not even there.

2086. I think also you attach importance, do you not, to the consideration that as far as possible lamps should be subject to supervision as regards their construction and manufacture?——Yes.

2087. So as to insure as great uniformity as possible?—Yes.

2088. And you also think it desirable, as far as possible, that the force of the red and green lights should be equalized?—Yes, if it is possible. I cannot suggest a remedy; but if it is possible to devise one, I think it would be very desirable, because the red light is much better, and always has been, since the days of side lights, than the green. I think the power ought to be increased, the minimum power.

2089. If you like to say that, by all means do. I did not trouble you with it because that is rather a larger question. That would be very important as regards first-class steamers with electric light, and perhaps first-class lamps; but knowing what you do of the sea, and the nature of the great many vessels that traverse it, do you think a condition of that kind could be imposed?—It would not entail much more cost, and I think it would make very much for safety.

2090. In practice, I am afraid, even now, there are a great many vessels whose lamps by no means come up to the Board of Trade regulations?—Then they ought not to be passed. I thought the Board of Trade exercised sufficient supervision to look after that.

2091. (*Rear-Admiral Andoe.*) The side lights in your ship are lighted by electricity, I understand?—Yes.

2092. You do not object to the full power of your light being seen right ahead of your own ship?—Certainly not.

2093. You do not wish to cut off any of the power of your light from right ahead?—No, I would not like to cut off any of it.

2094. And yet you suggest it would be a good thing to cut off a considerable portion of the power or brilliancy of a side light which has an oil lamp?—Not a considerable portion of it. I would not object to a part of my own being cut off in the same way if it was cut off close to the ship with one degree of convergence. I do not care if three quarter power of mine were cut off by the chock *at a short distance* ahead of the ship.

2095. The old regulation required a line to be drawn parallel to the keel from the inner edge of the wick to the outer edge of the chock—taking that, and taking the breadth of the wick to be 2 inches, that gives an angle of something like 3°, although the screening is absolutely parallel in a line with the keel, do you realize that—what do you say to that?—If that is the case, I think it is too much, and might be reduced by angling the wick or adopting longer screens, or by both.

2096. It is actually a matter of calculation?—To begin with, I did not think that any wicks were quite so wide. I thought that about 1¾ inches was the widest wick, and in the widest wick the lamps are generally lit by illuminants which reduce it. I have not had very much experience of these lamps of late, because I have had the electric light; but there are some of the illuminants where the flame is wider than the wick; but I am informed that in the case where the wick is about 1¾ inch, the flame is really narrower than the wick.

2097. If you throw the chock out anything beyond the wick, of course you cut off a certain amount of light from ahead?—You would only cut it off at close quarters.

2098. If you put the chock in front of the wick I think you would?—Not in front of the whole of the wick—in front of the inner edge or in front of the inner half of it.

2099. The Board of Trade regulation was that none of the wick should be screened—I mean it implied that. That gives an angle of something very nearly 3°. Do you think that it has been realised by sailors, as a rule, that the light has always been thrown across the bow to a certain extent?—All seamen know that the lights have been seen ahead, that they must show a little across to be seen at a certain distance ahead of the ship.

2100. It is not many years since the chocks were placed; screens were fitted originally without the chocks, and parallel to the keel. In those days the angle must have been considerably greater than now, would not that have been the case?—Of course, if the screen was parallel with the keel, but I rather imagine, in those days, they allowed for there being no chock there, and made the screen slightly divergent.

2101. Can you state positively whether that was the case or not?—I cannot, because I have not any measurements.

2102. You only infer it?—I only infer it, and in those days there were very very few side lights that showed more than the regulation distance. These first side lights and perhaps rather rough screening supplanted no side lights at all, and my contention is that the improvement then introduced requires further development and accuracy to keep pace with modern requirements, just as we now steer to a degree instead of to half or a quarter of a point which used to be considered near enough.

2103. Now, from the point of view of a captain of a ship, when it is very often necessary to have the officer of the watch in charge of the ship at sea when in the track of steamers, as on the coast of Spain, for instance, and very often these officers are young and inexperienced, and some, perhaps, not very well educated, do you think it would be at all desirable to make any alteration in the lighting of the ship which would entail an alteration in that very simple rule, "Green to green, red to red: perfect safety, go ahead"?—I do not think it would; but I do not propose any such alteration; the gist of my suggestion is that the rule of the road shall be carried out at night time as in daylight; at present, ships which would pass one another starboard to starboard in daylight have to pass port to port at night time. Supposing there were only two ships, and one ship, when dusk comes on lights her lights before the other, they are then in different positions. If neither light their lights, they pass like that (*describing*), but if one of them switches on her electric light, that causes the other vessel to port, to pass to port, and *this* one wants to pass to starboard, seeing along the starboard side and no lights. I cannot see anything more likely to lead to a collision than that.

2104. Supposing that the lights did not cross, as they now do, with vessels passing one another, say red to red very nearly ahead of one another, and not seeing the opposite light, they therefore went on their course "red to red, perfect safety"—I do not say you would do it, but a young, inexperienced man with the rule of the road in his head might do it, and then there would be danger?—I

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allow no inexperienced man in charge of my ship. I have only got very experienced men.

2105. I do not say you, of course. All ships that go to sea are not officered like yours. Ships' officers vary a great deal, and a great deal is necessarily left to the discretion of the officer, and when he sees one light only he says, I only see one light, I am going straight on, if anything happens I shall be all right; and so he acts accordingly, and gets very close to the other ship; whereas, if he sees the two lights, although rather on the bow, he knows perfectly well that both ships have to port their helm and go away from one another. Does it not appear to you that it would lead to what are called "close shaves" at sea?—No, I have seen no close shaves until this regulation came out in which the lights showed across, and immediately that came out, we found vessels which would have passed to starboard crossing our bows, and risking collision if we had not kept a good look out, so much so that I altered my chocks back again to what they were. I preferred to risk the displeasure of the Board of Trade than to run down a ship and to cause the loss of a number of lives.

2106. Have you heard it stated that a great many ships at Liverpool had to have the chocks increased because the angle was too coarse?—I never heard that.

2107. That they were too coarse, and they had to reduce the angle in a great many cases?—Well, I can quite believe that; that is what I did with mine after the Board of Trade surveyors cut the chocks.

2108. Therefore 4° was really less than the angle at which they were originally screened?—Do you mean when the Regulations came out they found they were screened too coarsely? Not that my side lights were screened too coarsely. That statement was made by one of the Board of Trade surveyors about one of our own ships. She was one of the ships which were examined in Liverpool, and when we went into it we found that the Board of Trade surveyor had altered the ship in London just before she went round to Liverpool. And it was a very extraordinary thing that when those statistics were prepared by Sir Digby Murray, there were hardly any mail steamers in them. I think in the Liverpool list there were four Cunarders, and one was 1°, another 1½°, another 2° or 3°, and another 2°, as well as I remember.

2109. Would you like to leave more to the discretion of the officer of the watch than is now properly left to him, or would you like what is called a rule of thumb left for his guidance; I am speaking now generally, not for experienced officers, but for seamen as a rule?—But I do not see how the finer screening would leave more to them. In each case the officer acts according to the lights he sees, the only difference being that with the broad screening he and the vessels going the other way are crossing one another's bows quite unnecessarily.

2110. We have diagrams before us here which show, if very fine screening were the rule, it would lead, if not to collisions, to very close shaving?—I have not seen them.

2111. (*Chairman.*) Do you regard vessels which are [*describing with models*] each fine on the other's starboard bow, as in a position of practical danger?—I have been in command of a ship for over 20 years, and I was a responsible officer for some years before that, and I have never, in my experience, seen a case where that would apply, where I thought there would be any danger. And if you put a case like that, I should not then stop here. An officer who will rub sides with another vessel passing starboard to starboard is just as likely to do the same thing on the other side if compelled to pass port to port.

2112 (*Rear-Admiral Andoe.*) Some of these tramps yaw a great deal, do they not, in their steering; have you noticed it?—I see them sometimes.

2113. It arises from bad steering?—Yes, from bad steering, I presume.

2114. Then in some cases it is very difficult to know what to do unless you can see both lights right ahead or nearly ahead?—If you see them like *that*, well, then, port; but it is very hard to have to do that for every vessel you come across in the Channel. You find one or two for which you have to do extraordinary things sometimes, if you come across a ship navigated like that.

2115. Does that not show that screening to a degree is rather unpractical, considering that ships yaw several degrees either way in steering?—I do not think so; on the contrary I think it a decided argument for fine screening when, if a vessel yaws and shows first red and then green, and so on, you can tell to a nicety how she is steering, and seeing her eccentricities give her a wide berth. I think the light showing at 4° across the bow would introduce a great risk of collision that was not there before, and it also may put vessels ashore when you are going up river. I gave a case on the chart *there*, to show how it might cause a stranding, and the same thing might happen going up a reach of the Thames. Here is some shoal water *here*. Now, these two ships would pass clear, but this green light shows across, and you do not know that it does; to make sure of being on her port bow you have to port more, and perhaps get into danger through it.

2116. But, then, coming up the Thames, ships are in charge of local pilots, who have local rules, and who understand each other, and know what each other will do?—I beg your pardon. As far as pilots are concerned, they conform to the rules as to side lights; and the Trinity House pilots were the first people to call my attention to the cutting away of the chocks and they objected as much as anybody to it. Our side lights were all right until this new rule came out and the surveyor cut away our chocks, and I have had mine altered twice or three times; and each time they were altered either way the difference was most marked in the way other vessels passed us, showing plainly the increased risk with the larger angle of convergence.

2117. Do you think it would be practicable always to place side lights well abaft the foremast so as to give a clear view right ahead?—Yes, they could always be placed so as to give a view. It will not do to put them in certain places and then put a boat in front of them. Of course the Board of Trade surveyor must look to that.

2118. Do you think it would be practicable to give such an order as that, that it could be carried out in practice?—Perhaps not immediately with uniformity; but it can very well be gradually brought about.

2119. Do you not think it would rather lead to disaster than otherwise, if you thought all ships were fitted in that way and dealt with them accordingly, and you found they were not so when you came up to them; would it not be misleading?—No, I do not think so, because seamen would know that the change was being brought about gradually. There are plenty of ships being fitted up now in that way, and we see they are fitted up in that way, and that the ship's side lights are abaft, and we can see the alterations in the course. There would be no more risk during the alteration than at present when the lights are in every conceivable position.

2120. Where are your side lights usually fitted?—Mine are abaft, but not quite so far abaft as they usually are, as the bridge of my ship is very far forward indeed—it is within 100 feet of the stem, and the ship is 500 feet long.

2121. Do you think they should be at all abaft the bridge? Would there not be a liability of there being a glare in the eye of the officer of the watch?—Of course you would have to provide against that. You must put them so that there would not be. My side lights are placed so that the plane passing through them and the mast-head light makes an angle of 42° or 43° with the vertical.

2122. (*Mr. Ismay.*) I think, perhaps, you may desire to explain. I believe that your bridge is quite exceptional in its position?—Oh, very exceptional indeed; the bridge is so forward.

2123. As a rule, the position of the bridge in most steamers would fulfil the conditions you want?—Yes, but the bridge in my ship is very far forward. A position can always be found for the lights at this angle, and so that they will not dazzle the officer of the watch.

2124. Of course you consider it a very undesirable thing, as a practical seaman, that there should be anything like a light or glare in the eyes of the officer of the watch?—Yes, and we cover our passenger lights when we get into narrow waters, I mean the lights on the promenade and upper decks in the neighbourhood of the side lights.

2125. What I take it is, you wish to increase the power of the lamps and reduce the angle, and by that means you get narrow screening with a longer range?—Yes; shortly stated, that is it. The fine screening is what I contend for, and uniformity is desirable; that screening would be equally effectual for small vessels; and for lamps of small power. The crossing that would be harmless in them would be very undesirable with lights of great power; and fine screening, I contend, would be equally good and perhaps better for the lights of smaller power too.

2126. You feel so strongly on the subject, I understand, that in spite of the Board of Trade Regulations you have decreased the angle?—I feel so strongly on the subject that I have altered my light screen back again. As fast as the

Board of Trade surveyors have cut the chocks away, I have put the pieces on again when I got away to sea, on the principle that I knew that I had plenty of lawyers as well as seamen of the same opinion as myself; and I thought that I would rather risk the displeasure of the Board of Trade than run the risk of running a ship down.

2127. Is that not misleading to ships who expect you are complying with the rule?—I do not think so.

2128. But they expect to find you screening to an angle of 4°?—It does not make any difference. They only get quicker across the sector than possibly they expected. Increasing the angle would be misleading to other vessels.

2129. Have you ever looked at your lights from your stem-head?—Yes, from the forecastle.

2130. Can you see both?—No; but by leaning a little over either bow you could see one or the other when screened to 4°.

2131. Have you been on board ships where you could see both?—I have not myself, because I get so much of my ship when she is at sea, I do not bother much about her when she is at home, or about any others. But our marine superintendent has seen some from the stem-head.

2132. It is so; as a matter of fact now, I think that you could?—Yes, from some.

2133. (*Captain Thomson.*) I suppose, in the evidence that you have given you have spoken from the point of view of a captain of a large ship?—Well, yes; I have given this evidence from my own point of view practically; but I do not think I have said a single thing that can be depreciatory to the side lights as far as other vessels are concerned in carrying out the Rules of the Road; and I have talked this subject over with men of all grades of my profession, and they are agreed on the subject—everyone that I have spoken to; nor can I see how the screening that is best for a large ship can be otherwise than good for a small one.

2134. There is one point to which I should like to call your attention. In the diagram, when you were describing the three lights of an approaching steamer ahead or a little on your starboard bow, at a distance of five to six miles, you said you had to port?—Yes, in *that* position [*describing*].

2135. Why should you port at that distance?—Because, if you see the three lights of the steamer, the rule of the road is that you should port. You cannot judge distance on a dark night. You see the three lights, and you want to shut one out as soon as possible, unless you are quite certain the distance is a long way off.

2136. If you meet a ship at sea five or six miles off, that vessel may not see you at all at that distance. Supposing you are in a small vessel?—I guarantee she will see my vessel if she has anybody looking out.

2137. But supposing you are in a small ship and not a mail steamer; take a little tramp, say, 80 feet long, and you see a vessel five or six miles off, that vessel would not port to you at all. She will keep on her course?—She ought to port and shut in the green light which, if there is no other danger in the way, is the usual practice as soon as the lights are seen.

2138. Now see what happens. The little tramp, taking you to be five or six miles apart, seeing you at that distance, will port to you, and he will be driven out of his course considerably, but you will keep on your course, and that is not keeping the rule of the road. The rule of the road is that both vessels shall port. Therefore you cannot take that rule to apply at a greater distance than two miles, because it is the legal range of the side lights. Another thing, if both vessels port is it not the case that they will deviate very little from their course?—If they both port? Well, they would not have to deviate very much. But still I put two vessels there, and I put a third one here, which does not come in, it is so very far off. My argument is the more the lights cross, the more you have to port. Supposing they are seen two miles apart, you have still to port when there would be no occasion to do it at all if the lights were screened to 1° instead of to 4°, and I can say safely I never had any trouble that way at all until the Board of Trade surveyor cut away my chocks, and then I altered them, after we had gone down Channel, and I altered them the next voyage, and again on the next voyage, and vessels running across our bow all the time and courting collision before I altered them back. Another thing, the legal range of side lights is not two miles, but *at least* two miles. It is quite impossible in practice to tell when lights are exactly two miles off, and even if it was possible it would be most undesirable to have to wait instead of letting the other vessel see your intention sooner.

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2139. Are you aware that if the screening is parallel with the keel, as has been advocated, the rule of the road with regard to meeting ships would be that you could not meet a ship end on or nearly end on at any time unless the stem of that vessel really cut between the side lights of the other vessel, are you aware that if parallel screening was carried out, the logical interpretation of the rules of the road would be, I think, as it was in the case of the Chili, that a vessel at night-time could not be considered end on, or nearly end on to an approaching and meeting vessel, unless the stem of that vessel actually cut between the side lights of the other vessel, or bisected what people call the dark lane?—Unless they were meeting stem to stem.

2140. Precisely?—I suppose that deduction could be made but I have never advocated absolutely parallel screening. There are two rules which we are trying to make dovetail the one into the other, and it is impossible that the light shall show ahead, and not show a certain degree across the bow, and that is why I recommend the small angle of convergence that will make the two rules dovetail into one another as nearly as possible, and which will interfere each with the other as slightly as possible. Make them to converge 4° to show a short distance ahead, and there is no saying *that* does not cross the bows, 4° is a material angle.

2141. I think you have called attention to the discrepancy between the rule of the road for daytime and for night-time?—Yes.

2142. That is to say, if one vessel should suddenly light her lanterns although it is daylight, or only just getting dusk, and she may see the other distinctly?—It is broad daylight at sunset when the law says the lights are to be exhibited.

2143. Now, in the daytime, meeting ships may have an angle of 4° with the fore and aft line of your ship, and be nearly ahead of you?—Yes.

2144. What angle would you call nearly ahead of you?—I should certainly not call 4°. 4° certainly does not come on the boundary. 2° might, it would depend upon how far you are off.

2145. Does the distance make any difference to my question? It is a question of direction, and not of distance?—It does in this way, as you said to me just now, you would not port for a vessel when she is 6 miles off, it does in a way, and it does not in a way. If I, at 7 miles off, saw a vessel in that position (*describing*) and she was 4° on the bow, I would not port my helm to go the other side of her, and I do not know that I would at two miles, not unless she was steering wildly and at night showing, or partially showing, her red light.

2146. Suppose half a mile?—Well then, I think I would rather starboard, the vessels would be near enough, unless I saw the other vessel port. Well, I should pass starboard to starboard in any other case, unless there were some peculiar circumstances, and the other vessel was doing what she ought not to do or I thought she was doing what she ought not to. She certainly could not port for me seeing only my green light, and my starboarding would only tend to draw me away from her.

2147. But do you not think, the other vessel being in this case at an angle of 4°, that she would have a reasonable cause to think you nearly ahead of her?—No, I do not think so, unless she saw both my side lights, as she would not if screened finely.

2148. You could not tell at what angle you would think she was really nearly ahead of you?—I think the distance makes a material difference, because you have got more time to pass her at a distance—and you can starboard and bring her another degree or two on the bow. I think the distance makes a material difference.

2149. You seem to have some difficulty in settling the angle in your mind?—Because I doubt whether it is possible at a long distance. I would be guided by circumstances, even at long distances. You can show the other vessel by starboarding a little (less the farther she is away) that you mean to keep on that side. I always endeavour to indicate to other vessels, as soon as practicable, what I intend to do. A much greater alteration of course and increase of distance would be necessary to cross her bow and get on her port side.

2150. Therefore a man might think himself nearly ahead of another up to—would you think 5°?—I do not think you would ever take five.

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2151. It is an uncertain thing what nearly ahead means?—There is a certain amount of uncertainty, and it was introduced by the expression which, I believe, was brought in about the time I went to sea, "masts nearly in line." But I contend that 1° is about the same as "masts nearly in line." I brought that into one of the papers I wrote in the "Nautical Magazine." The rules of the road say you only port your helm in daylight when the other vessel's masts are in line or nearly in line. I say that 1° corresponds in my opinion to masts nearly in line, 2° might be doubtful. At 3° they are no longer nearly in line.

2152. In modern ships, where the masts are very far apart, or in cases where ships have no masts at all, you could not go by that rule?—No, and you could not measure the angle either. You would have to measure it by your eye, and act at once by your eye.

2153. I should like to ask you whether you think there is any difficulty in understanding the phrase used in the regulations for preventing collisions at sea, with regard to the fixing of the lamp. It says the lamps are to show a light from right ahead to two points abaft the beam, over a horizontal angle of 10 points?—Well, there is very little difficulty in fixing them.

2154. That is not my point. I want to know whether you think there is any ambiguity in that expression. Have you any difficulty in realising what that means?—There is a slight ambiguity, because right ahead may mean right ahead of the lamp, or it may mean right ahead of the stem of the ship. If I may refer you to what I put in this paper about that; it is better than I can express it off hand. I take a broad view of the regulations as a whole, which say that the side lights shall show from right ahead to two points abaft the beam, and not show across the bow. Even admitting that right ahead means ahead of the stem I think it quite unreasonable to suppose that this is to be interpreted, for instance, a foot in front of the stem, because then the side lights might show two, three, or four points across the bow, according to whereabouts on the side they were placed, and the model of the ship. The only reasonable interpretation is that it means ahead of the stem, at such a distance as will avert a collision and yet fulfil as nearly as possible the other condition of not showing across the bow. I contend that as there must be some limit of error to the angle with the keel, that limit may very well be put at 1°. By never letting the convergence exceed 1°, and by never letting the lights cross nearer the stem than 3 lengths or 30 beams of the vessel, the deviation from parallelism is so slight that the regulations will not be infringed, ships will pass one another at night as in daylight, and all the useful purposes for which side lights were originally adopted will be served. That is my view of these regulations.

2155. As I understand, you do think there is ambiguity in that phrase. It can be read both ways?—It can be read both ways, I presume, but I contend we must read it as it will best fulfil the regulations as a whole. The framers of the rule probably meant ahead of the lamp, but in another of the rules they infer that both lights will be seen ahead of the ship. My proposal leads to a minimum of deviation from both rules, besides being conducive to safe navigation.

2156. Can an angle of 10 points be more than an angle of 10 points, and cannot an angle of 10 points be limited by two lines of direction?—Most certainly it can, but I consider it most important that the forward limitation—the head limitation of that angle—should be most accurately fixed for safe navigation. An error of a few degrees in the limiting line abaft the beam will never bring about a collision. Still, it can be made as nearly correct as possible.

2157. With regard to that point, do you not think the case rather critical, where it is a question of whether a ship is an overtaking ship or a crossing ship on the starboard side?—I do not think so. There was a collision out on the Australian Station—I will not mention the names—the one ship said, "It is not my place to get out of the way," and the other ship said, "It is his place to keep out of my way," and so the collision happened, and the officers of both ships were condemned by court-marital. They were like *this* (*describing*).

2158. I do not think that was common sense if they were coming on like that?—If one had ported a little or the other starboarded or gone like *this* (*describing*) there would have been no collision.

2159. Was there not reason for their both thinking the other ought to give way?—That is what each said. There was a great conflict of evidence as to the course one or both ships were steering. Even a slight discrepancy makes all the difference, as to whether they were crossing or one of them overtaking, which made it, if there was any doubt, all the more necessary for both ships to act and sheer from one another.

2160. How do you suppose they could have known the truth of the matter?—Well, when they were getting too close together, if one had starboarded a little and the other had ported a little, there would have been no collision, and the finding of the court-martial was that they considered them both guilty.

2161. If it was the case exactly, of two vessels within the limiting condition and they both ought to give way, as a matter of fact could that not be settled by screening the side lights accurately to two points abaft the beam?—I do not think so, because to begin with it has been generally assumed that you are crossing if less than two points abaft the other vessel's beam and overtaking if more than two points, and you cannot find that in the rule of the road.

2162. It is not in the present rule of the road. Are you aware that it is in the proposed regulations for preventing collisions at sea?—Do you mean in the Washington Rules?

2163. Yes?—Well, I only glanced over that part of the Washington Rules; it is accepted sometimes, but it is not defined.

2164. The Chairman tells us that it is the law at present?—I have never been able to find it in the rule of the road. It is done generally. It may be law.

2165. Do you not think it necessary in that case to screen the side lights to two points abaft the beam?—Well, I do not mean to imply that it would not—that they ought not to be screened. I say screen them as near as you can, but I think that the line of the side lights ahead is immeasurably more important than that abaft the beam.

2166. (*Captain Castle.*) Vessels show a light over the stern?—Yes.

2167. (*Captain Thomson.*) You made some experiments* with electric light?—Yes, aboard my own vessel.

2168. What candle power?—32-candle power.

2169. You measured the angle by means of the shadow, I think, of the light against the chock?—The shadow of the chock on a flat screen that the light stands on. Supposing that is the fore and aft screen on its edge, there is the horizontal screen the lamp stands on, then you can rule a line along the edge of the shadow made by the chock on the flat screen, and then calculate the angle the line makes with the plane of the keel. I do not know whether an oil lamp would throw a sufficiently defined shadow; we carefully measured the angle of one side light and then the other on the other side, and found the crossing point ahead of the ship, and it agreed within 7 or 8 or 9 feet of the crossing point. I measured with the lead line, as I said before.

2170. You appear to me to have found fault with the rule of the road?—In what way?

2171. With regard to the difference between the rule for daylight and night-time?—I find no fault with the rule of the road. I find fault with the misconstruction. That does not allow the same interpretation and practice of the rule of the road at night as during daylight. I do not find fault with the rule of the road itself. I say that I want the same practice to obtain at night time as applies in day light, because otherwise it is deceptive and there is enormous risk to ships. Supposing you get a fleet of a dozen ships going that way, and a dozen ships going that way (*describing*), the law says that the lights shall be exhibited at sundown, but no two of those 24 ships exhibit their lights at exactly the same instant, and you have got a different rule applying, or a different method of applying it according to whether you see lights or not.

2172. (*Captain Hallett.*) With a view to what you said just now, about your being so very particular with regard to the line of crossing ahead, in preference to the line of crossing abaft the beam, does not that point in your mind to the necessity of laying down a certain direction for the wick to take in oil lamps?—It never occurred to me.

2173. With regard to the angle of crossing you may have a wick lying athwart ship, an inch and a half across, and another man may put his wick *that* way?—The point you speak about did not arise in my mind, but another thing did.

2174. The width of the wick is a great factor in the screening in the angle of convergence, and you say that factor should be reduced as little as possible?—I think it would be very advisable to throw the wick back, say, at an

* *See* Appendix 7, No. 1.

angle of 45°, so as to reduce the apparent width when looking at it from ahead.

2174*a*. To have some uniformity of position?—Yes, the wick ought to be in the centre, something like 45°; that could be fixed. The more it is thrown back to reduce the athwartship width the better.

2175. You are in favour of making a fixed position for the wick of all lamps so as to obtain uniformity?—Yes, and I see now how it is quite possible to get over the difficulties of uniformity of convergence to a great extent with single wicks of different widths, by setting the narrowest to, say, 45° to the keel, and the broader ones at smaller angles, so that they would all subtend the same angle at the crossing point ahead of the ship. This ought to be feasible if there was supervision in the construction of the lamps.

2176. With reference to the question put to you on the diagram, did you understand that that measurement, when you were illustrating it on the diagram with the models, would bring these two vessels within half a mile?—No, I did not.

2177. Because they must be in that position at half a mile, and for a mile they would be out of distance?—Then I would not carry an officer with me a second voyage who got into a position like that.

2178. Do you understand that the lights were not supposed to be visible, and that all the distances are not worked out more than half a mile?—That is a case where common sense and judgment are necessary.

2179. You could not be in that position within half a mile?—No. You have no business except in a fog to get there, to begin with, or only under very extraordinary circumstances indeed.

2180. (*Captain Barker.*) You said just now that in the tables of the Board of Trade about the screening of lights there were no mail steamers mentioned, giving the crossing of the angle?—I said there were very few.

2181. Perhaps you have not seen the report of the P. & O. Company?—No, I have not.

2182. That says that 80 per cent. of their vessels were screened to 4° or upwards?—Were not those measurements taken after the alteration?

2183. No, they were taken before—I imagine so—before the alteration?—I think not. In that report, if I am right, unless my memory very much misserves me, it mentions that the P. & O. were altered, and they gave that as a reason for not bringing any of them in. They were altered before any measurements were taken.

2184. The report is here if you would like to see it. [*A document was handed to the witness.*] I can certainly say that the two or three P. & O. captains I have talked to on the subject agree with me, and one of their most experienced captains, who is a friend of mine, agrees with me entirely in what I have said.

2185. We have here a summary* of the reports as to the angle of screening before the change. This is the report of the London district. It says "The majority of vessels were "screened to 4° or over. The old instruction was a rule "of thumb, and the result was dependent on the position "of the wick; in practice it was found the angle was an "angle of about 4°. From a return handed in by the "Marine Superintendent of the P. & O. Company it "appears that 80 per cent. of their vessels were screened to 4° or over"?—I think there is another list, this is not the one I have seen.

2186. Supposing the lights were screened so as not to show right ahead, do you think there would be any diffused rays showing across the bow at all?—I do not think there would be any from the light itself, but there might be a certain amount of light from the outside of the lens.

2187. That is what I mean, diffused light?—Yes.

2188. How far do you think that light would show?—Not a tenth part of the distance of the power of the light.

2189. Because many think if the lights were screened there would still be a lot of stray rays?—I would not go the length of screening the whole, I have not contended for that; but even then I do not think there would be enough to provide a dark lane.

2190. Do you not think the new rule may have made seamen a little nervous in navigating as they were under the impression that they were steering with the light screened parallel with the keel; do you not think that they got a little nervous?—Everybody thought the angle was increased, and as a matter of fact it was increased in whole fleets of ships to my certain knowledge. I do not think it made them nervous; I do not think that at all. Ships crossed our bow all the time, all through the alteration.

2191. What kind of electric light do you use in your side lights; is it the ordinary lamp that you use in the saloon?—Yes.

2192. Not a special light?—No.

2193. There is a certain width in that, it is about an inch wide?—No, it is not the way it is put in; when you stand forward of the light the light seems a thin vertical line.

2194. With the dioptric lenses?—Yes.

2195. With the fish globe lenses it would not be so?—Would it not?

2196. Not unless you get it right ahead with the dioptric lenses?—I do not know how that would be.

2197. The lamp is a 32-candle lamp?—Yes.

2198. Of course you are aware that in an electric light with the green light you get practically a white light?—I do not know whether you get a full green; we have a full green, I know that.

2199. With the electric green lights they have an orange colour at the back, do you know that?—I do not think so, not with ours.

2200. You will find probably, unless there is something to prevent it, that the electric light will kill all the green rays, and you will have a white light ahead of the ship, unless you have an orange light at the back?—Ours is a green light, and in passing our other ships at night their starboard lights have always looked green, possibly a shade paler than with oil.

2201. (*Captain Castle.*) That has been demonstrated in the P. and O. Company; they have peculiar electric lamps quite small. Are you aware that the London, Chatham, and Dover vessels are all screened to 4°?—No, I am not. Although they may have run clear they would have less difficulty in doing so if screened finer.

2202. And the South-Eastern boats 3½ to 4° and they are running across the path of ships going up and down the Channel?—Yes, I see here, in this list, a number of P. and O. ships, and it states that the angles were not measured till after the alteration.

2203. I suppose that is the most dangerous navigation you could have, across the Channel?—Yes, they cross the path of all the vessels going up and down the channel, but they meet few going the opposite way to themselves. With crossing vessels the convergence would be harmless if noticeable. It is in the case of meeting vessels that it is so mischievous and dangerous.

2204. (*Mr. Bolam.*) In the case of your steamer's side lights, you have reduced them to a physical line, practically as nearly as possible?—Yes.

2205. When you are compelled to screen from the outside, the effect of that would be that the whole force of your side light will be thrown the whole 4° across the opposite bow?—Now the whole force of it is thrown a degree and about 10 minutes of arc across the bow.

2206. That is after you put your chock on?—After I altered the chocks back as originally—I never measured them originally.

2207. I am asking you about the order. If your light is screened according to the new plan, each of your side lights will throw 10 points plus 4° of uniform, unbroken light?—Yes.

2208. And the same thing would be in every side light of the same kind?—Yes.

2209. And you would have a uniform and unbroken light thrown 10 points and 4° across the bow?—I would have a uniform and unbroken light from two points abaft the beam to 4° on the other bow, 116¼°.

2210. That rather seems to point to this; that to screen from the outside is a mistake, because it gives you no control over the uniform light, whereas if you screen from the inside you can have control, and get a uniform and unbroken light?—Yes.

2211. And you will be able to control the divergent rays?—Yes, with my electric side light there is no breath of wick at all; the inner and outer edge are the same.

2212. Quite so; supposing you screen 1° from the centre of illumination, you will be quite sure to cut off part of the

* *See* Appendix 2, No. 2.

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light ahead—the uniform light, with broad wicks?—I do not quite follow.

2213. f you screen the light from the centre of the source to the edge of the chock, at an angle of 1°, then you will cut off some of the uniform light right ahead, where it has a broad wick?—Yes.

2214. Well, it would not be possible to do that under a rule of screening from the inside?—Well, it is absolutely impossible to carry out the existing regulations entirely as it is, so it is a question which is the least objectionable compromise.

2215. You think screening 1° from the centre of the source of light would be a correct thing in all ships and all lights?—I do.

2216. Both for electric lights and for wick lights?—I think it would be best for all classes of vessels.

2217. You, at any rate, would prefer to screen from the centre in preference to the outside?—Yes.

2218. Would you mind putting these two models end on and take the distance at 1,000 yards, say half a mile. *These* are end on—absolutely end on, therefore they are meeting, and therefore, of course, both port; put them a degree on each other's starboard bow?—There they are (*placing the models.*)

2219. Are they meeting or passing?—They are meeting.

2220. Now put them 2°, are they meeting or passing?—Meeting.

2221. Now put them 3°, are they meeting or passing?—Well, it is very hard to say where one rule begins and the other ends, but in practice I should call 2° as nearly as possible the dividing line between meeting and passing. It would be quite impossible at night to say whether a green light was 2° or 3° on the bow, and I should in either case starboard sufficiently to show the other vessel decidedly what I meant to do, unless he gave me the cue first by showing his red either designedly or accidentally.

2222. In fact there is a limiting case between meeting and passing which will never be got over?—It will never be got over.

2223. That must be always left to the intelligence of the officer on the bridge?—As matter of fact, it must be left to him.

2224. Put the models 1° on each other's starboard bow; there would be no difficulty in navigating with fine screening?—No.

2225. Now, put them 2° on each other's starboard bow; supposing you have a very fine screening, they will only see the green light *there*. What would they do?—They will only see the green light. They will be perfectly safe if they go on; you do not want the red as it is passing starboard side any more than port to port.

2226. Now put them 4° at, say, 1,000 yards. There again, they stand on both of them?—Certainly.

2227. Without altering their helm?—Yes, unless they thought they were going too fine or a little too close, when, of course, they would starboard.

2228. What I want to get is, whether 4° gives more angle of safety than the 2° angle of screening?—4°, I do not think it does, just the reverse.

2229. The point of the argument in favour of the 4° screening, as I understand it, is that green to green becomes perfect safety, go ahead. Then you can shut your eyes and do nothing?—Green to green. So it is with 2°, but you must keep your eyes open in either case.

2230. Is 4° better than 2°?—If you see any glint of the red light cross the bow, then you might port, but if you saw nothing but the green light, then I should say not. But this is a very different thing from porting for every vessel you see coming up Channel.

2231. If the two vessels were approaching half a mile apart seen 4° on each other's bow, and the screening was 4°, and they went on, two vessels of 60 feet beam would just clear each other's side at 119 feet, that is two beams. Would that be safety?—Two beams; they would not collide at that, and the same would hold good if passing port to port.

2232. At sea?—They would not in the open sea attempt to pass so close, and each would starboard.

2233. Would that be perfect safety?—No; but you get over that difficulty easily. It is only a mole hill; you get mountains by the broad angle of screening. They would see before they got close, and starboard a little more. I say these vessels would pass 365 feet apart* if they went on, but that would be most imprudently close, even in daylight, in the open sea. This is a case where the seaman's eye, instinct, practice, and experience come in, which no amount of convergence or theory can supplant. There is less risk of passing too close starboard to starboard than the other side, because it is the general practice of seamen to give a wider berth when passing starboard to starboard so as to leave no room for doubt in the mind of the officer in charge of the other vessel.

2934. What I want to get is, whether the instructions for screening at 4°, as compared with the instructions at 2° from the outside, gives any more absolute safety at those angles and makes the rhyme "green to green and red to red, perfect safety, go ahead," any more certain in the one case than in the other?—I do not want to make the rhyme right. I want to take care of the ships.

2235. You would rather sacrifice the rhyme?—Yes.

2236. Do vessels yaw a good deal in steering, especially cargo vessels and sailing ships?—Yes.

2237. With vessels steering in that way, is the 4° any greater safety than the 2° would be?—No, and 1° would be safer still.

2238. Even from those two points of view, from the point of view of the angle of screening, and from the other point of view of yawing, in the way of safety 4° would not be better than 2°?—No.

2239. Is there any advantage at sea at all, in point of fact, with a large angle of screening?—None whatever. The man that carries out the rules of the road so like an automaton as to rub sides with the fine screening will do the same with the 4° angle, which has all the navigational disadvantages I have enumerated. I have never heard but one argument in its favour, and that was Sir Digby Murray's own opinion; and he told us when we went to see him in deputation that if two vessels were approaching one another in foggy or hazy weather, and that if they could not see both side lights, there would be a risk of collision. Well, I say if they got as close as that the side-lights will not avoid collision. There is nothing but full speed astern.

2240. Have you a statement in your notes of the method in which you arrived at the conclusion that at the Washington Conference they inadvertently doubled the angle?—Taking the whole angle between the lights instead of the half angle. It is not in my notes, but it is in the "Nautical Magazine." There is no possible doubt about that. It is in the "Nautical Magazine" for March 1893, at page 208. This is the passage,—"It is rather amusing, if not instructive, to read the account given by Captain Mensing, of the German Navy, of how they came to adopt the half-point angle in the amendment they proposed. After stating that there were only two countries where the principle of the lights crossing is accepted, Denmark and Great Britain, he goes on to quote from a French translation of an English Board of Trade table, where it says 'that for the beam of a ship 20 feet broad, the 'shortest distance at which these rays should cross each 'other is about 200 feet, that is to say the rule laid down 'by the Board of Trade comes practically to this, that at 'the distance of 10 beams, or 10 times the breadth of 'beam, there should be a distance before which these 'rays of the side lights should not cross. That makes a 'half-a-point.' This is the angle under these conditions the the rays from the starboard side would make with those from the port. He at once proceeds to double it by reckoning it from the prolongation of the keel or axis of the ship. This error perpetrated by Captain Mensing escaped notice, was actually copied back into the British resolution which supplanted the German amendment, and voted for and against as if the angle had never been mutilated, while those who voted against, especially the Americans, no doubt did so, on principle, independent of the magnitude of the angle. I think it highly probable that some of those who voted for it did so, because they thought it in accordance with the rules formulated after long and extensive experience by the English Board of Trade. This proves that Sir Digby Murray's present angle of 4° is 1° greater than the maximum angle in the old Board of Trade regulations, and yet he wishes us to believe in the face of this and all the cutting away of chocks, that side lights are screened now at a finer angle than ever they were before."

2241–2. When the debate began at the Washington Conference the original motion was to amend the rule and prescribe that side lights should be fitted with inboard screens, and so on, so as to prevent these lights being seen across the bow within 100 metres ahead of the ship, and it

* *See* Appendix 7, No. 2.

was later that the proposal was made that the lights should cross at an angle not exceeding half a point?—I have forgotten that.

2243. That is the first resolution, and then it was seen that was not a good way of screening, and they proposed a resolution to deal with a crossing at a certain angle?—Yes.

2244. The resolution was in these words: "Side lights "should be so screened as to prevent the most convergent "rays of the light being seen more than half a point across "the bow"?—Yes.

2245. Do you know at all what beam the committee were thinking of when they suggested half a point?—No. As I have said, I read the proceedings themselves, and in the account given by the German Naval delegate, Captain Mensing, which I have already quoted, it struck me as extraordinary if the dimensions he named could give the result that he claimed, and I went into the calculation and found that he had doubled the angle.

2246. What do you say is the average beam of vessels?—My ship is 54 feet beam, and I suppose some of the big Atlantic liners are 60 feet and more.

2247. I have taken the average beam which you have given in your paper, about 32 feet?—I have given a few examples in that paper in the "Nautical Magazine." Two are large steamers, with their lights placed differently, one a sailing ship, the celebrated "Thermopylæ," and two schooners of the same length, but with different beams.

2248. In the Board of Trade experiments they have taken 30 feet as if that were a fair average?—Yes.

2249. I want to know if you noticed this: the first resolution which appears at Washington is that the outside rays should cross 100 metres ahead of the ship?—Yes. *Capt. J. Fitz-G. Ruthven.* 15 May 1895.

2250. If you take a vessel about 32 feet beam, I want to know if you have ever noticed that that makes each side light cross one-quarter of a point?—Crossing how far ahead of the ship?

2251. 100 metres. If you take a ship of 32 feet beam, and make the lights cross 100 metres ahead of each side light, the outer rays will be crossing exactly one-quarter of a point. If the second proposal were based on the first set that would seem to show it was a quarter of a point of each side light that was meant, and not half a point. I do not know whether you have worked that out?—No, I took it from Captain Mensing's account. There can be no possibility of doubt that Captain Mensing made this blunder quite inadvertently, and nobody saw it. If you take his own words you will see that is so.

2252. And that confirms your view?—Yes.

2253. (*Mr. Scrutton.*) If you are approaching a vessel at sea and see both lights, is it a rule that you port?—Both side lights, most certainly.

2254. Even if you are satisfied that the vessel is a little on the starboard bow?—Yes.

2255. If both lights are seen distinctly, you port, even though you may know that the vessel is a little on your starboard bow?—Yes, because, as I understand the rule of the road, if he did anything else and anything happened he would be held liable and have to answer for it.

## Thursday, 16th May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

Captain MATTHEW PEDDEN WEBSTER called and examined. *Capt. M. P. Webster.* 16 May 1895.

2256. (*Chairman.*) Captain Webster, I think you have been in command of both sailing and steam ships, have you not?—I have.

2257. Will you kindly tell the Committee what your experience is; how long have you been in command of vessels?—I have been in command of large sailing, ships, but principally steamships, for 28 years.

2258. I think you have been connected with Sir Donald Currie's Line, the Castle Line?—Yes, for the last 23 years.

2259. Have you been in command of any of those vessels?—Yes, nearly all of them.

2260. Has your experience extended to vessels of various sizes?—Yes.

2261. What sort of limits of tonnage?—In sailing ships from 1,200 up to 1,500 tons, and in steamers from 2,000 up to 5,500.

2262. Of course the breadth of beam of those vessels you have been in command of, or have had to do with, varies a great deal?—Undoubtedly.

2263. What are the limits of variation of the vessels you refer to, as to the breadth of beam?—From about 32 up to 52 feet roughly in steamers; there is less beam in sailing ships.

2264. Before the Board of Trade rule as to screening to 4° came into force, what was the angle in practice, so far as your experience goes, to which the lights of vessels were actually screened?—Well, my experience has been rather different from what has been said by the Board of Trade. My experience for the last 23 years has been that the lights have been screened in the line of the keel.

2265. You mean screened to the line of keel?—To the line of keel.

2266. Do you mean the inner side of the glass, or the inner side of the wick?—I should say the inner side of the wick.

2267. Had that been the case with vessels with which you were connected in the years before 1892?—It had. As a matter of fact, the Board of Trade surveyors reported that the whole of our ships were screened in the line of keel, and I was rather astonished that they should pick out one company and say that 80 per cent. of the Peninsular and Oriental Company's ships were screened at a large angle and not give the other side of the question, because undoubtedly the surveyors reported the Castle Company's ships to be all screened on the line of keel.

2268. So that in point of fact, in the case of those vessels, in consequence of the Board of Trade regulations the chocks have had to be cut down?—They have been altered, yes.

2269. Before the regulations came into force, what is your view as to what the state of things was. Did you think in point of fact that the side-lights of vessels did cross much, or that they did not?—In my experience at sea I certainly have met vessels where evidently the lights were crossing before. I have been at sea this year, and I think decidedly that has increased.

2270. Now I should like to ask you what your opinion about the Board of Trade rule of 4° is. Do you think its effect has been good or bad?—Well, I think that the effect of screening the lights at an angle of 4° in theory and science may be very well, but in practice you

*Capt. M. P. Webster.*

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not only see the light at an angle of 4°, but you frequently see it up to 10° or 12°. It may be diffused light or reflected light, but that does not much matter with a seaman on the bridge as long as he sees a light; you undoubtedly are seeing those lights at a great angle. Now, I suppose that everyone is agreed that the object of the side-lights is that one ship may indicate to another the direction she is steering in. It is obvious to my mind that if you cross the lights at all,—we will suppose they are only seen 4° each side, that is an arc of 8°—you are diminishing the efficiency of that light to tell the way the ship is steering.

2271. So that in your opinion may I take it the lights ought to be screened as fine as possible?—Yes. I would rather, if there is such a thing, have a little dark lane, because ships do not travel on rails, they are constantly moving a little, so if there is a dark lane it would not last many seconds.

2272. Of course you know the international regulations enjoin an unbroken and uniform light over an arc of 10 points. Do you attach importance to a full and unbroken uniform light being shown ahead of the ship?—I do not quite follow your question, sir. The uniform light—I would like it to be seen as near as possible ahead, but I do not want it to go across, because my experience of the lights crossing is that you see diffused light, or you see the light a good deal more than the 4°. Therefore, I think the lights screened on the line of keel was a safer and a better principle.

2273. Can you tell us in this way. I daresay you have recognised that if an unbroken and uniform light, that is to say, a full light, is to be shown over 10 points of the compass, that it is absolutely necessary that there should be some crossing of the outside or converging rays of light?—Yes.

2274. Is it your view that that crossing should be made as slight as possible?—As slight as possible.

2275. What I understand you to say is, that if necessary you would rather sacrifice some part of the completeness of the uniform light ahead than have a great degree of crossing?—Exactly so.

2276. I should like you, if you will, to explain to the Committee what your reason is for thinking that the crossing of the light is a disadvantage?—Simply because as I said before whatever the arc is of your crossing lights—if you cut it off exactly at 4° that makes 8° altogether—it is impossible for a seaman on the bridge of a steamer to know within that arc how the vessel is steering. The vessel might be going *that* way, or *that* way, or *that* way [*describing*]. You cannot tell within the radius of that arc, whatever the crossing is, which way the vessel is going.

2277. As to the importance of a fine screening, do you think it applies most in the open sea or in narrow channels?—I think if the screen is adapted for showing across the bow that would be more dangerous in waters where there is a large amount of navigation than the open sea, certainly.

2278. As to the mode of screening, you know the rule of the Board of Trade is that the 4° should be reckoned from the outside the wick. Have you formed any opinion as to whether it is best to screen in relation to the outside the wick, to the middle of the wick, or to the inside of the wick?—No, I have not. I have only gone into the practical part of it in looking at the lights. I have read all the papers, but I have not paid the slightest attention to the scientific part of it at all.

2279. It is suggested on the other side, as against fine screening, that great importance is to be attached to the rule of the road, "green to green, red to red, perfect safety go ahead" And on that subject the suggestion of the Board of Trade is that if you get the screening very fine indeed, you might have vessels very fine on each other's starboard bow, and these vessels, if both kept their courses would come into collision. And it is said that under those circumstances, both the vessels being green to green, that there is not perfect safety if the screening is very fine?— Theoretically that may be correct, but in practice I do not think it is possible. We have great trouble with having poor lights on ships at times. There is no doubt about that. I do not mean in the ships I have been in. I have been in mail boats for a long time where we use electric lights, but we meet vessels with very poor lights, and I do not think you could screen the light so that two of them could come together starboard to starboard without seeing the lights in plenty of time, in practice.

2280. Supposing you saw the green light 2°, I will say, or perhaps 3°, upon your starboard bow, what would you do? A green, and only a green light 3° on your starboard bow?—I would, of course, starboard.

2281. You would starboard?—Certainly.

2282. You would think that that was a case in which it would be right, although green to green, according to the rule, is perfect safety?—Yes, but I would starboard on the principle that 2° is rather too close. I would go away a little bit.

2283. You would regard that as a matter of good seamanship, apart from the question of rules?—Certainly as a matter of good seamanship, because, if after closely watching the green light for, say, 20 seconds, I saw nothing but the green light, I would be justified in considering this a crossing ship, my contention being that it would be impossible for any ship to sail on a directly parallel course for 20 seconds, even with finely screened lights, without my seeing her red light, but taking into consideration that the angle at which the other ship was crossing *might* be very small, I say I would starboard a little, not only that by so doing I would pass the other ship at a more comfortable distance, but also to make certain that I would not show my own red light (by bad steering) to the other ship. I venture to say this is not in opposition to any "rule of the road." I think you should never go too close to a ship; when you see a light, or anything else, keep away from her. Do not shave too fine.

2284. So that you would not regard that as a position of practical danger?—No, but with 1° or 2° I would certainly say starboard a little and get a few degrees more.

2285. And I suppose you would carry that to 3° or 4° or as much as half a point, supposing she was half a point off?—In various waters half a point with a green light, you would keep on your course.

2286. But a quarter of a point; I suppose, that would be a case for a touch of the starboard helm, would it not?—Yes, I would feel inclined to do so, that is provided the navigation allowed my doing so.

2287. I think you have said that what is called the "dark lane" is not a matter which appears to you to be of practical importance, even if theoretically there should be some such occurrence?—That is so, from the fact that in the very finest steering ships, and I have been in very fine steering ships, you cannot keep many seconds in a degree the ship must move.

2288. What is the variation in a well steered ship?—Well, the variation is certainly a couple of degrees steering in the very finest way you can.

2289. Each way?—Yes, but I must say I have made a voyage where we have steered day after day, making 380 miles a day, probably 2,000 or 3,000 miles, and the course has not varied 1°. But that is in the gross. Still the ship would be moving a little in that each way.

2290. Of course, that is very good steering indeed?—Very good steering. It is only on a long course you could do it, and with very fine compasses and good steerers.

2291. Taking the ordinary ocean-going steamer, a steamer of the tramp class, what is the sort of variation?—The variation would be half a point certainly.

2292. (*Rear-Admiral Andoe.*) From the view of the captain of a steamer in the open sea where the shipping is rather thick, like on the coast of Portugal for instance, and having also in view that the ship must necessarily at times be in charge of an officer of the watch who may be young and inexperienced—possibly he may be well educated, although the officers of many of these tramps are probably not so—supposing, as you said just now, you saw a ship on your starboard bow 2°, you would starboard your helm?—A ship on my starboard bow—a green light I understood.

2293. A green light on your starboard bow?—Yes, I would move the helm, alter it a little to widen the distance.

2294. But supposing you were a tramp steering half a point or a point either way, and you showed both your lights at one time owing to a yaw to the ship approaching you, would not that vessel whilst you were starboarding your helm naturally port her helm to keep clear of you, seeing both your lights?—Yes, certainly, but I would also see her red light, and of course port.

2295. While you were going away on the starboard helm she would be going away on the port helm and that might possibly lead you into collision?—Yes, but I was not asked that question. I was asked what I would do if I simply saw a starboard light, if my starboard light was to his starboard light; and that is a very good illustration of my objection to the light crossing the bows, because I take it that if they were steering parallel courses, if they were passing ships, 2° on each other's bow, you would see both lights in both cases.

2296. Then you would both port your helm according to the rule of the road?—Well, according to the present rule of the road, and that I maintain is one of the dangers of lights showing across the bow. You might see both lights 4° and with diffused light 10° or 12° on the bow, and still you would be passing ships going parallel courses. You both port; if you happened to be rather close you would come into collision.

2297. In the case I pointed out just now, you would be giving starboard helm, the other vessel would be going port helm, going straight for one another; you would not be able to get out of one another's way?—Yes; but the case put to me was this: I see a green light, no other light, and I was asked what I would do, and I said as a matter of prudence I would widen the lights a little. There was nothing said to me about both lights.

2298. No, but if the other ship caught sight of both your lights at one time and went away on the port helm?—Well, if I only saw the green light——

2299. I merely point out that in the case where too much is left to the discretion of the officer of the watch collisions of this sort might occur from that cause?—Yes.

2300. (*Chairman.*) I suppose, you would say that if your lights were screened fine she would not see both?—Quite so. If she was 2° on my bow, and we were steering parallel courses, she would not see my red light if I starboarded a little—only seeing her green light I would not think it possible for her to be steering a parallel course.

2301. (*Rear-Admiral Andoe.*) But I presume that you are yawing, an ocean-tramp yawing?—If I were yawing it would mean that I would bring her green light on my port bow, and she would probably be doing the same, and according to the rule of the road (2° is practically end on) we would then both port our helms.

2302. I am also supposing that the vessel approaching is a mail steamer, steering a steady course, showing her green light?—Yes.

2303. You, the mail steamer, only show the green light to the tramp, and you see both of his lights, red and green, and port your helm, and run him down?—Yes. Well, there is a possibility of that; but my instructions to my officers on a mail steamer have always been these: There are not many ships that can go faster than you can, and you can turn right round, but do not go near any tramps at all if you can help it.

2304. You say you do not attach great importance to the full light being thrown right ahead. I do not mean ahead of the ship, but we will say ahead of the lamp. You do not attach as much importance to it being seen full ahead as you do on the bow?—No, I do not mean that. I do attach importance to the light being thrown ahead, but it should not go across the bow.

2305. Then you consider that it is as necessary that the light should show as brilliantly right ahead of the ship as anywhere on the bow?—As near as possible. I mean, of course, that scientifically it is probably an impossibility to make a lamp screened fine show as strong a light right at the end of the screen as it does anywhere else.

2306. You would not like the chocks of your screen to overlap any part of the wick in your lamp, so as to partly screen it from ahead?—I would rather do that than have the light across the bow. If it is an impossibility to get the whole of the wick of the lamp exposed without throwing the light across the bow I would rather cut off a piece of the wick.

2307. Is it not one of the most critical positions with ships passing one another, when they are nearly end on or within a point or so of each other?—Certainly.

2308. When you see the lights at night fine on the bow?—Yes, undoubtedly. I do not know about being critical, but it is one of the positions where you require to take very sharp action.

2309. In yawing first one light is seen and then the other, by which the officer in charge of the deck is left in doubt as to what course the approaching ship is really steering. That is entirely through yawing. What do you think of that?—Well, the officer of the ship that sees that ought to put the question beyond doubt, if he is in open water going up or down the coast of Portugal, for instance, by putting his helm over and bringing the light a couple of points out on his bow; two or three points.

2310. With a port helm?—It would depend on circumstances.

2311. Suppose he first sees one light and then the other?—If it is nearly ahead port his helm.

2312. Nearly ahead?—Yes.

2313. Previous to these new regulations, previous to this question being raised, did you fully realise the fact that the rays of all side-lights crossed?—I realised this, that I have never been able to discover a dark lane.

2314. Supposing it were fully proved that the screens of the side-lights of vessels have always been fitted so that the rays did cross the bow at a certain angle, say, 4° or thereabouts, would you be in favour of altering this old practice and substituting very fine screening without knowing what the consequences might be?—Well, you are putting a supposition to me, "suppose it was fully proved."

2315. Supposing it were proved, I do not say whether it will be or not, but supposing it were proved by evidence before us?—Well, yes, I would. I would be in favour of it.

2316. You would be in favour of altering the rule?—Certainly I would; but I do not for a moment think that it is possible that it can be proved.

2317. Supposing that the regulations were altered so that the lights should not cross the bow of the ship at all, and consequently that two steamers approaching one another very nearly end on would see each other's green light only, do you realise that they would pass, or possibly pass, exceedingly close to one another?—Certainly not, if they were both steamers.

2318. If they carried out the literal rule of the road?—If both steamers could see the green light only, and carried out the literal rule of the road and starboarded, they could not go near each other.

2319. Suppsoing you had an officer of the watch in charge of the ship, a young and inexperienced man, who said that the rule was, "Green to green, perfect safety, go adead," and thought there was no harm in giving a close shave as long as he was on the right side?—But we do not recognise inexperienced young men. The Board of Trade give them all certificates.

2320. Not in your company, but I suppose you may have tramps that you are glad to keep out of the way of altogether?—Yes, but the officers pass all the same examinations.

2321. Would you like tramps to give you a close shave?—I take good care they do not, I can go faster than the tramps.

2322. Do you think it would be desirable and conducive to safety that the side-lights should be fitted to so fine an angle that it would entail the cancelling of the present rule?—Of the Order in Council?

2323. Yes?—I certainly do; the 4° business, I certainly do.

2324. "Green to green, red to red, perfect safety go ahead"?—Not at all. I thought you meant the last Order in Council where the 4° angle was brought in.

2325. Would you like to see the permanent rule that you put into the hands of every young seaman and which he knows by heart, would you like to see that cancelled and a great deal more left to his discretion, in passing ships?—I think it is a great pity it was ever put into rhyme. I imagine a man before he becomes the officer of a ship ought to know enough of his business not to require a rhyme to remind him, but the practical part of the thing has worked admirably, and I would not alter any of these rules.

2326. Do you think it is firmly impressed upon the minds of the young seamen?—Undoubtedly it ought to be so; before a man becomes second officer of a steamer, he must have been eight or ten years at sea.

2327. By doing away with this rule you leave a great deal more to the discretion of the officer?—Yes, but I

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think the rule has answered admirably and you must have a rule of the road at sea, and you must have one that will be practically international. All I want to do away with is the rhyme.

2328. In fine screening, it would necessarily lead in many cases to close shaves unless the officer in charge of each ship uses discretion and judgment?—That is just the point I do not see; I do not agree with it.

2329. You think not?—I do not agree that fine screening would necessitate that at all.

2330. If you see a light 2° on your bow, you would either go straight ahead on your course or give starboard helm if it was the green light, and go away from it?—That is the present rule of the road.

2331. The rhyme is "Green to green, perfect safety go ahead"?—I think that is not so, if you will read the rule, that it is simply prudent even with green to green to keep clear.

2332. I am thinking now of the officers in charge of these tramps?—Of course, that is a very good point, but the officers in charge of these tramps ought to be as competent as officers in charge of the bridge of a mail boat.

2333. Ought to be so; do you think they are?—In many cases they are.

2334. Then why are you so anxious to keep away from them when you come across them?—Because in many cases they are not.

2335. Not what; not to be trusted?—Well, the fact of the matter is this, and probably it is rather beside the question, but the fact of the matter is that it is not the competency of the officers on those tramps, but it is that they are overworked and undermanned, and perhaps the poor officer is not on the bridge at all; perhaps he is down pulling a rope, or doing something else.

2336. (*Chairman.*) It is a question of look-out, very often?—Very often. Perhaps that is the reason of my keeping clear of the tramps. I do not say a word as to the officers; I only know they are overworked.

2337. (*Mr. Ismay.*) Do I understand you have been an officer since the new regulations?—Yes.

2338. And from your own observation have you seen any change in the lights?—Very marked. I ought to qualify that by saying that when the new rule came in force I was on shore. I paid a little attention to what was going on, and then I went afloat again; and probably I devoted a good deal more attention than I formerly did to notice the angle that I could see the lights at in different ships. In January of this year I was coming up the English Channel, and there was a very marked case of it. It was a hazy night. I was in a large ship, the lights were seen well enough. We were going along pretty well. I was on the bridge, standing not at the steering compass but at the standard compass in front of it, and there was a masthead and a red light reported on my starboard bow, and I took the glasses and looked. I saw it and said to the man, "port," and before the ship had answered her helm, the red light crossed the bow, and I took a bearing of that light, it was then some 7° on my bow, and of the visibility of the red light I had seen at first. Suddenly the green light loomed up. I was just in time to say, "starboard, starboard," and we passed very close. I think if I had continued to port we would probably have had a collision. Do you follow me? The red light I saw at a greater distance through the haze than the green light, and undoubtedly that ship was going a parallel course. I saw the red light. I took the bearing from the standard compass, and undoubtedly saw it 10° or 12° across the bow.

2339. And you would rather run the risk that might arise in the case put by the Admiral than such risk as this?—Certainly.

2340. And of course while theoretically it may be right to keep on, as a practical seaman you would naturally starboard when you see a green light?—Yes. In all those experiments with the lights, and I see some nice plans there, the fact is you are dealing scientifically with the thing. It does not apply to a ship, and I do not believe you can screen those lights to give a 4° angle. I have no doubt that all the gentlemen here have watched the history of the screening of lights, how the Board of Trade officers themselves have been probably working in the dark for all these years, and now there is an order to screen to 4°; and it may be diffused light or not, but whatever it is you see it at a much larger angle; on a dark, dirty night on the approach of a steamer you see a light, you cannot tell whether it is a light or diffused light, you see a light, and that is all you can go by.

2341. Where are your side-lights placed on board your steamers?—Our side-lights are in most of our steamers almost in a perpendicular plane with the masthead light, very near it.

2342. Do you think that is a good position?—I do not know, but there is one thing I am very certain of, that the Board of Trade, or the law of the land, ought to fix the relative position of the side-lights in all steamers to the masthead light.

2343. Would you not rather have your side-lights abaft the masthead light?—I think probably on the whole it would be better, but the distance abaft must be fixed and the height of the masthead light ought to be fixed relatively to the beam of the ship. You would find probably that one beam and a half of the ship would be a proper position for your masthead light, and then the side-lights one beam abaft the mast head light but, whichever position you fix, let it be universal.

2344. Would there not be a great difficulty in arriving at that?—I do not think it. I do not think there would be, but it would be a tremendous help in navigating in narrow waters or in dirty weather, if you knew that the side-lights and the masthead light were carried in a special position.

2345. Have you ever looked at your side-lights from your stemhead?—Yes.

2346. Can you see them there?—You can see the light from them. Yes.

2347. Both at the same time?—You could not see the lights themselves, but you could see the light from them. You do not require to do that in hazy weather; you can see them from the bridge of a steamer which has powerful lights, and for years past I have been with electric lights, powerful electric lights, the port light a 100-candle power light, and the starboard light to make it up to the same visibility as the port one, 200-candle power, double the power of the other; when a little haze comes on, you have only to stand on the bridge and you see the rays of light through the haze.

2348. What is the distance of your lights from the stem head?—The last ship I was in 40 to 45 feet; most of our lights are in towers.

2349. I think you have been on shore a long time?—I have not been long on shore.

2350. But an interval?—Yes.

2351. Were you superintending new ships then?—Yes, building.

2352. Do you know whether as a matter of fact in the Castle Line the chocks were reduced?—Oh, yes. I know that the point which struck me very much was that when the deputation waited upon the President of the Board of Trade I think I am correct in saying that it was stated that in one company in London, the P. and O. Company, 80 per cent. of the lights were above the angle of 4°, but there was never a word about the companies that had the lights screened in a line with the keel. Probably the gentleman did not know it, he was only speaking from his instructions, but certainly if the surveyors of the Board of Trade were asked now, they will tell you that in our company all the lights are screened in a line with the keel.

2353. And you think it is an omission on the part of the Board of Trade not to do it?—Oh no, I think it was rather a one-sided statement. I may tell you in connexion with the recognised rule as to the lights showing ahead to two points abaft the beam that some of the best lamp makers in the kingdom made the lenses of the lamps so that they could not show more than the 10 points, and the consequence is that if they were to show 4° across the bows they would take off the 4° from abaft the beam.

2354. You do not attach much importance to that?—No, but I want to show you really what has happened. One of our ships unfortunately came to grief and some of the salvage out of her was sent home, and amongst it was a pair of spare lamps, practically good new lamps, and they were sent down to Glasgow to be put in as spare lights for another boat, but they were condemned by the Board of Trade surveyors because they would not show more than 10 points; they wanted 4° more than 10 points. Those lights would not do so and they were condemned.

2355. Under the new regulations?—Yes.

2356. Then they were right there?—No, I do not think so; the regulation says nothing about it being more than 10 points.

2357. But the Board of Trade regulation says they shall be screened to 4°, and they were acting upon their instructions, were they not?—Oh, yes, perfectly. This is an old fashioned lamp—a shipping lamp, not a tower lamp.

2358. How do you account then for the Board of Trade having issued the regulation when there is so much opposition from seamen like yourself?—Probably by not taking the opinion of practical seamen; the work on board a tramp or even on board of a mail boat is very, very different from what it is in the Royal Navy.

2359. You think that they were not sufficiently practical?—That is about it, sir, really.

2360. And what you really contend for is that about the safest way to screen lights is to screen them so that they shall cross as little as possible?—So that they shall cross as little as possible.

2361. (*Sir F. Evans.*) I should like to make this point quite clear. When you say screened parallel with the keel, you mean roughly speaking that the screen is parallel with the keel, and the chock made so that the light that travelled from the edge of the light to the edge of the chock should be parallel with the keel?—Yes, I have not tested the rays of light business, but if the screen is put roughly parallel with the line of the keel, then the chock is placed parallel with the inner edge of the wick so that the edge of the wick shall not show across the bows.

2362. And you would take the light as a point, practically?—Yes.

2363. With respect to the placing of the lights, you say you attach very great importance, and I can easily understand it, to there being a uniform position of the side-lights in regard to the masthead light?—Undoubtedly so.

2364. Do you refer to a uniform angle?—No, I refer to this; that at the present time some ships carry their side-lights in the same plane as the masthead light; others carry them away abaft, and I think someone referred to the side-lights being away before the masthead light; you cannot judge, it is most awkward. If you knew the relative position of those lights you could tell at once what the ship was doing.

2365. That is to say if she was bearing a slight degree one way or the other you could notice it?—Yes, but not knowing the position of the lights you cannot now tell it, and you can understand that the point I want to make very clear is that the relative positions of the lights and the height of the masthead light should be regulated in all ships in some proportion to the beam of the ship.

2366. Now will you explain why, because I do not understand it?—We will suppose that a ship is 30 feet abeam, and that you decide that the proper height of the masthead light is a beam and a half, that would be 45 feet. We will suppose that the side-lights are to be a-beam, 30 feet abaft. You know that the lights are there, and you can judge very easily; but if you leave the height of the light without any proportion to the ship, it simply means that you will not regulate the light in the same way for all ships. I am giving it as a beam and a half; the actual height of course would vary; the larger the ship the higher she can carry them.

2367. I quite understand that it would give you a uniform height, of course?—And it would also allow you to judge the size of the ship you are approaching.

2368. Is that a matter of importance?—Oh yes, everything is of importance at night. You say to yourself "that is a big mail ship; we must be careful what we are doing," or it may be a smaller vessel.

2369. But still the greatest value would really come from its being a certain distance abaft the masthead light, so that you could see the decreasing angle in a moment?—I think putting the lights in the same plane has something to be said in its favour, but I think a certain uniform distance abaft the masthead light is the better plan.

2370. (*Captain Thomson.*) You said the side-lights in your vessels previous to the new Board of Trade rule were screened, I think, parallel to the keel?—Yes.

2371. Can you tell us what lamps were used when that was the case?—Electric lights.

2372. When that was the case?—Yes; as nearly all our lights are in towers, it does not matter whether they are electric or oil lamps.

2373. And 100 or 200 candle power electric lights?—Yes.

2374. Do you know what kind of filaments those lights had?—I think that in the first experience of them, we broke up a lot of them, but I could not tell you; they were incandescent lights.

2375. You do not know the shape of the filaments?—Oh, they were curled flames.

2376. Swan-Edison?—Yes, Swan-Edison.

2377. Can you tell me about what the diameter of the curl or flame was?—Well, they changed very much. I think we were about the first that used them, and they improved them very much afterwards. I do not think they would use them so powerful now. I think we found that we had them rather too powerful.

2378. If you did use 100 candle power filaments I should think that the filaments would be quite an inch wide?—No, not at all. Do you mean that the coil was an inch wide?

2379. The width of the filament. The angle at which it extends with the right angle; that is from one side to the other?—Oh, yes, it would be so.

2380. Were your lights screened from the outside or inside of the filaments?—That I could not tell you, but I know that the lights were not seen across the bows. I have experimented with them myself in dock. I could not tell you exactly how they were screened further than that I have gone ashore in Cape Town and seen and examined them myself.

2381. Practically you thought your lights were screened parallel with the keel, but you did not know the details of the screening?—No, I know that the lights did not show across the bows; therefore I assumed they were screened parallel with the keel.

2382. Do you not think it perfectly impossible using 100 candle power incandescent lights with a filament 1 inch wide subtending a degree and a quarter, that such a light would not show across the bows, or across the fore and aft middle line of the ship?—You could screen it so that they would not show.

2383. How could you screen it so that it would not show across the bows?—Probably if we found that it did show across the bows with great power, they would bring the chock further over to the outside of that filament.

2384. You would cover the filament with the chock?—I did not say so. I have already told you that I cannot tell you that was done, but I know that the lights did not show across the bows.

2385. I only want to arrive at what must have been the condition to satisfy what you said. I think I may say as a matter of fact, that a light of that power, and with a filament an inch in diameter at right angles to the keel, screened at the outer edge of the filament, would show across the bow at a moderate distance 7°?—Then we had the rays screened so that they would not show. It must have been outside of that.

2386. I think you said that with the 4° screening, according to the present Board of Trade rules, you were uncertain of the course of a steamer up to 8°?—Certainly, and up to 20° or 24° with diffused light.

2387. A meeting steamer?—Certainly.

2388. Is that quite the fact of the case. Are not the steamer's masthead and side-lights a partial indication of how a vessel is steering?—Not at all. There is no rule where they are to be placed. How can it be an indication?

2389. Is not the masthead light of a steamer always placed in the midship line?—Yes.

2390. If you see a steamer approaching you with a masthead light bisecting the two side-lights, does that give you any indication of how she is approaching?—You do not see a steamer at all; you see the three lights, perhaps the steamer is rolling. It does not give you the slightest indication.

2391. Even if the ship is rolling or pitching or even yawing, and you see that on an average the masthead light apparently bisects the two side-lights does not that

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give you any practical indication of how she is approaching?—Not practically.

2392. You do not think it gives you a practical indication that she is coming end on?—Yes, we are supposed to know she is coming end on; but I want it defined closer. I say that with the lights crossing the bows we cannot tell; she may be coming close on to us, or she may be 8° away from us.

2393. Do not the side-lights show with different intensities. Does not the light nearest you show stronger than the light on the opposite bow?—That depends upon the lamps. The lamps are very different.

2394. But with all lamps?—With lamps of the same power, yes. I understand what you mean. But we are speaking of my being on the bridge of a steamer looking at a light at night; I do not know what sort of lamps they have got. I see a light, that is all.

2395. I understand you to say that every little detail is of help in judging the distance and course of a steamer?—Yes.

2396. Then you do not think the two facts which I have mentioned are a help in showing you how a steamer is approaching?—I do not see if the lights are crossing the bow. You cannot tell within 8° what way that vessel is going. It is impossible.

2397. You do not think I am right in supposing you can actually tell in some cases when a steamer is approaching you immediately end on at night. You can also tell in some cases, in general cases, when she is steering away from you, that is, if she is on your port bow, and steering a course to pass to port of a parallel course, or if she is on the starboard bow, and steering a course to starboard of a parallel course?—No, you cannot judge under present conditions; if you adopt a universal placing of the lights, then your argument might come in, because with the slightest yaw of a ship with the side-lights in a fixed position, at an angle to the masthead light, she would show very quickly, but at the present time there is nothing to guide you.

2398. Then what you consider ought to be done is that there ought to be a fixed position for the lights, so that you could tell how the ship is steering within 8°?—Yes, I think you could, because if the ship yawed 8° you could tell.

2399. Then if that was done one of your present objections to the 4° screening would cease?—No, because you would still be in doubt. One objection is this arc of 8°, and with the light screened to an angle of 4° this arc is often 22° or 24°. The side-lights are to indicate the way the ship is steering, and I defy any person on a ship to tell on a dirty night exactly which way the ship is going within that arc.

2400. And you are in favour of a uniform pattern for lights?—Yes, decidedly.

2401. And you would have a small ship and a big ship carry the same pattern of lights?—I would not exactly say that. I would say that you ought to have a minimum power for any sized vessel, but you would not limit the large mail boats that carry more powerful lamps.

2402. You do not think then that a uniform lamp would be of advantage?—No, I think it is probably better that those fast-going ships ought to be seen at some further distance than the small ones, because undoubtedly on board of those fast mail steamers you have a better look-out than you have in the other ones, and every man knows that you are going fast, and every person is on the *qui vive* for the smaller vessel.

2403. And how far do you think you would see the side-lights of the smallest vessel on a fine night?—The Board of Trade says it should be two miles.

2404. Do you think it is that?—No, I do not think so.

2405. Do you think about one mile?—Yes.

2406. You think that would be the minimum?—No I thought you were asking me how far I could see it at the present time.

2407. Yes, certainly?—The Board of Trade says it shall be two miles, but I do not think you do see them two miles; I should say about one mile.

2408. Are you aware that good colza oil lamps have been seen at a distance of 12 miles?—Oh, yes, I daresay—why not?

2409. You think that is probable. Are you aware of that?—I am.

2410. And are you aware that the electric lamps, one especially of 200 candle power which you have mentioned, would give a light about 12 times greater than these colza oil lamps, which are seen at 12 miles?—That would depend entirely upon the colza oil lamp; we had those before the electric light. We had magnificent colza oil lamps with Chance's reflectors and everything. They are a very different thing to your ordinary colza lamp.

2411. That is what I am speaking of, a first-class colza oil lamp and a first-class Harvie lantern, that can be seen at 12 miles?—Yes, but that would be the white light, not the coloured light.

2412. I am speaking of the coloured light?—Well, it would be under a peculiar state of the atmosphere; it would be refraction. It would be a rarefied atmosphere. That is not the natural light. It is a phenomenal thing. You can see that off the Cape of Good Hope frequently.

2413. I only wish to compare the positions. If you could see the colza oil light 12 miles under ordinary circumstances, I think it follows you could see your 200 candle power lights at a greater distance, almost as far as you could possibly see it, according to your elevation?—Under those circumstances I question if you would see the electric light one yard further than the colza oil light, because you are seeing the oil lamps under abnormal circumstances, circumstances that are not natural at all, and I question very much whether you would see the electric light any further.

2414. I want to ask you a question about the period of oscillation of a steamer when steering to 2°; can you give the Committee any indication of what the length of time occupied is in making a complete oscillation of 2°?—It would depend very much upon the helmsman.

2415. I think that is a debatable question whether it does or does not. Can you give me your idea of the time that would be occupied in swinging that 2°?—Do you mean if I want to bring her those 2° straight off, or if the man is trying to keep her as steady as he can.

2416. No. I think you misunderstand me. You have told me already that when a skilled helmsman is steering her she oscillates 2°; that is, her head swings like a pendulum 1° either way. A pendulum has a period of time. In what time does that oscillate? Can you give me the time which is occupied during the period that she oscillates that 2°?—But the ship is under the control of a man who may be a good or a bad steersman. The pendulum is going naturally. There is no period whatever of oscillation.

2417. You think if your ship is going 18 knots, perhaps there would be no period of oscillation?—At 18 knots there would be no period. It depends entirely upon the man at the wheel.

2418. Do you think she would swing 2° under ordinary steerage in a second of time?—Well, she would do it in two or three seconds.

2419. (*Captain Wilson Barker.*) I think your lights are screened to about 1° to the inner edge of the wick?—Well, they are screened now, of course, according to the recent Order.

2420. Supposing they are screened to 1° as before from the inner side of the wick which would allow about 1¼° across the bow if it was an inch wide. You can take that as about right. Supposing you saw a vessel coming down on your starboard bow with her green light open about 2°, you said just now you would starboard to that vessel, did you not?—Certainly, for the reasons already given.

2421. Suppose the other vessel not seeing your other light but only seeing your green light, holds on, and you only starboard a degree or two, as he comes closer to you he probably might see the diffused rays from your red light?—That is my argument against the diffused rays.

2422. And then he will probably port his helm; you cannot cut off all the diffused rays, but they are only visible at a very short distance?—If you see a green light 2° on your starboard bow I maintain that if you see nothing but that green light you must take that ship as a crossing ship and your duty would be to starboard.

2423. Suppose the other man does not look at it in the same way?—Very well, that is how collisions arise.

2424. Because you see as he comes close you may think it is perfectly safe; but he sees the diffused rays from your red light very likely, or the glimmer, and he thinks probably you are altering your helm as he gets close?—But do you not see if I am starboarding my helm I am shutting in my red light all the time very rapidly?

2425. That is so if you put the helm over much, but I understand you to say you would only put it over slightly just to give her a little more room?—Yes, but when you go starboard for a while in that way you would certainly go away a point.

2426. Then there is no reason why you should not port according to the regulation?—Pardon me; if I see a green light the ship may be crossing my bows, I may be running into that ship if I port.

2427. You have got the masthead light to tell you?—That I have not. That is exactly my argument; the side-lights and the masthead lights are placed in any position you like, and I cannot tell how that ship is going.

2428. But if that light was screened to 4° that would show exactly whether the vessel was coming down ahead or not?—How so?

2429. Because you would see the red as well as the green light, and then you would port your helm?—Yes, that is so.

2430. I am speaking of two vessels which are meeting end on with a very fine screening—that is the case I am supposing. You say you would starboard your helm a little bit. I am saying you would only starboard a little to give a little wider berth; there is no reason why you should starboard at all if you follow out the regulation?—With ships of wide beam 2° is not wide enough.

2431. But supposing the other man thinks it is enough. We have to consider a young man who is in charge for the first time perhaps as officer of the watch. He knows the regulation says, "Green to green," and he is perfectly safe?—The regulation; I do not think you can read it that way if you see a green light right ahead and you see no other.

2432. This is on the bow?—2° on the bow is a very small angle. In fact if you are walking on the bridge of a steamer you can only take the 2° from the midship line, and if you went to the one side it would look as if it was on the one bow, and if you went on the other side it would look as if it was on the other bow, therefore, for practical purposes, it is right ahead, and your duty is to starboard.

2433. Do you not think it is rather too fine to have them screened from the wick like that?—No, I do not.

2434. Is it not better to have the screening a little wider so as to make it quite sure?—I think more collisions have occurred through the port helm business than through any other cause. Why should you not starboard? Why should you port, with only a green light in sight a little on your starboard bow?

2435. I do not see why, except it comes under the old sailing rule, does it not?—Yes, but all the recent rules of the Board of Trade have tried to put that out of their heads, and very justly so. You never hear of any port helm now; they say you shall pass starboard to starboard and port to port; and they have discovered that the sooner we eradicate the port helm business from the minds of old and young officers the better.

2436. But do you not think it better to have a clear understanding in a case of the sort than to leave it to a man's discretion?—I say it is not left to a man's discretion. I say in the case you have put to me the duty of the man is to starboard, and there is no doubt about it, that is, when he only sees the green light.

2437. It is quite opposed to the regulations?—I do not see; I have studied and read the regulations, and I say that is the regulation; you cannot tell how that ship is standing; she cannot be coming right down on on you or you would see both lights but she may be going right across or crossing your course at a very small angle.

2438. If he follows that he has got a green light to his green light; if he stands right amidships he will see that it is on the starboard bow, and he will have the green light opposed to his green light, and he will hold on?—But if you starboard it is quite safe.

2439. I do not see it?—In practice I think it is right.

2440. (*Captain Castle.*) You cannot sail a ship by book or by rule; do you think you can?—Hardly.

2441. A little must be left to discretion?—Certainly.

2442. And if you see a green light 2° on your starboard bow you would starboard?—Certainly, under the conditions already named.

2443. If you saw the other man was yawing about you would starboard a little more and let him see exactly what you intended to do, would you not?—Certainly.

2444. (*Mr. Bolam.*) You were asked something about your experience in the screening of your side-lights. You went on shore at Cape Town and saw for yourself at what angle the light crossed?—Yes.

2445. In doing that you were performing the very experiment which the Admiralty perform for everyone of their own ships though you were probably not aware of it?—Yes, probably.

2446. Therefore, from what you saw you satisfied yourself perfectly as to the screening of your lights?—Yes.

2447. Are you perfectly certain that the angle was such that the lights were practically screened to show right ahead and scarcely at all across the bow?—Yes.

2448. To nothing like the extent of 4°?—To nothing like the extent of 4°.

2449. And for how many years were you sailing in mail steamers with small screening perfectly determined by yourself?—23 years.

2450. So that you have had 23 years' experience of navigating a ship with a small angle of screening?—Yes.

2451. Therefore, if one wants to know whether a small angle of screening is a safe angle or not one may safely take 23 years' experience?—Yes.

2452. Therefore we have experience, and ample experience, that a small angle of screening conduces to safe navigation?—I think so.

2453. Have you ever collided with a ship?—Never. I have in the Thames, with a pilot in charge, but not with myself in charge.

2454. But in the open ocean?—No, never.

2455. Have you never experienced a collision?—Never.

2456. And are you perfectly satisfied in your own mind that a small angle of screening is perfectly safe for ocean navigation?—Certainly, the smallest possible angle.

2457. Do you know how these filaments are placed in the electric light, whether the coil is placed broad-side on or ahead, or at an angle?—The filament is up and down. The pear-shaped lamp hangs up and down.

2458. In the case of electric light and screening to 4°, the Board of Trade have practically compelled you to show as nearly as may be an unbroken light over 10 points of the horizon *plus* 4°?—Yes.

2459. There is a question whether screening at 4° conduces to safety at sea, whether 4° is not better than 2° or 1°. Take this case: Two vessels stem on; if they go on, of course there is risk of collision?—Certainly.

2460. But a very simple rule, of course, is for steamers to port their helm, both to port, of that there is no doubt?—The Board of Trade does not say so.

2461. The International Regulations say so?—But they say you are to move your helm so as to enable you to pass port to port.

2462. Therefore there is a very plain rule for that?—Yes.

2463. If the two steamers have the port lights just a little on their port bows there is no risk, because, in that case, they must pass clear; both, I suppose, are certain to port?—Certainly.

2464. The risk comes where you have a case where two vessels are showing each a green light very little on her starboard bow. Now, the Board of Trade have put in a table which shows that where vessels are screened to an angle of 4° across the bows, if two vessels are 60 feet beam, each approaching the other on parallel courses, and they see the lights 4° on their bows at a thousand yards distance, that is, just hiding

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the red, and the green is showing 4°, they say that these vessels will pass each other just clear by 119 ft., that is, 2 beams. For ocean navigation is that, in your opinion, a safe distance for vessels to pass?—Certainly not.

2465. Then if that is the outcome of screening to 4° as compared with 3°, or 2°, or 1°, in your opinion does the screening to 4° conduce to absolute safety at sea where green is shown to green?—By no means.

2466. And would that be perfect safety, even with 4° screening, green to green, red to red, perfect safety, go ahead?—Certainly not.

2467. Did you ever believe that was a safe rule?—It was never meant as a safe rule.

2468. Did any officer you ever had in your employment ever believe it was a safe rule?—Never.

2469. Is it not the case that wherever any light is seen, if it does not change its bearing there is danger?—Certainly.

2470. And does every officer on the bridge know that?—Certainly.

2471. And is there any case where the screening should be altered to preserve that rhyme?—No.

2472. Is not that rhyme in many cases absolutely misleading?—Yes.

2473. And is it not the officer's duty to watch the bearing of the light?—To watch the bearing of the light; an officer who, whenever he sights a light, does not go and take its bearing is not fit to be on the bridge of a steamer.

2474. Can you give any reason conducing to safety at sea for having a large angle of screening. Can you state any advantage which would occur in promoting the safety of navigation at sea depending upon the adoption of a large angle?—I cannot.

2475. (*Mr. Scrutton.*) If a vessel was 2° on your starboard bow would it be possible for you only to see the green light?—Certainly, because I might be going *that* way and the other vessel might be coming *this* way [*describing*].

2476. We will suppose them meeting each other?—That depends upon how the lights are screened.

2477. (*Sir E. Harland.*) Have you had any experience with dioptric lenses in your vessels?—I think some of them are fitted with dioptric lenses.

2478. I mean the lenses with the ridges; they are cut?—Yes, they are; we have got them at Chance's; they are very expensive lenses.

2479. And you think they are preferable for concentrating the rays of light more evenly on to the level of the water ahead of you?—I think they are; they are very much finer lights. We can tell at sea always when we pass one of our ships with those fine lights; we can tell by the light what ship it is.

2480. But is it the dioptric lenses which make the light a clear one, or is it that those lanterns with dioptric lenses fitted to them, being more expensive, are generally better fitted?—They are generally a little more particular about them; those lenses cost 20*l.* or 30*l.* each, and they do not put that sort of a lens into a jerry lamp.

2481. Can you give me any information as to whether the advantage arises from the dioptric lens, or is it that you think they are better supplied with burners and wicks?—Well, I think a little of both.

2482. With regard to throwing the light down in the water, do you think there is anything in that in practice; if you are meeting a ship with dioptric lenses, do you think that she concentrates the lights more on the level of your eye than wasting it up in the sky, or throwing it on the water?—No, but it is a more powerful light.

2483. Then from the optical point of view, you are not so very decided?—No, I know nothing about it.

2484. Whilst you are aware that such are invariably fitted in lighthouses?—Yes.

2485. And of course are very carefully cut and ground to suit that particular arrangement. You are not aware that that is the case in your lamps especially?—No, they are done as well as can be but you must remember that they are most expensive things; for instance, in lighthouses they cut those glasses so that the rays shall go in a certain direction. It is folly to do such a thing on board a ship; the ship is tossing about in all directions.

2486. Have you noticed that in those side-lights with dioptric lenses the whole lamp at a distance appears to be illuminated?—The light is more diffused; yes, undoubtedly.

2487. Then you think perhaps that the dioptric lenses perhaps may account for some of the witnesses who said, as you I think have done, that there is really no dark lane; that there is a diffused light?—Undoubtedly.

2488. Coming from the lamp in some direction or other?—Undoubtedly.

2489. Do you think that it may come from the glass portion of the lamp rather than from the direct ray of light from the wick?—That I cannot answer.

2490. For instance you will understand what I mean in a room where the gas is enclosed by a cut globe, or still more so by one of those white glass globes where you cannot see the light at all, and where the whole thing looks like a full moon?—Undoubtedly; cut glass diffuses the light more around.

2491. Therefore you think it is possible that this so-called diffused light reducing the amount of what is called the dark line may arise from the optical refraction of light through the dioptric lenses?—Possibly so.

2492. Some questions were put to you with regard to the advantage which you thought would be gained if there was a relative angle agreed upon as between the masthead light and the side-lights. Assuming *that* is the deck of the ship for the moment, suppose *that* is the mast, and that on the mast *here* is the masthead light, and that immediately from the plumb of the mast there are the two side-lights, the question was put to you by one of the Committee as to whether you were not able to judge as to how the ship's course was being altered by reason of the change of angle between the masthead light and the side-light, and I think you said you could not judge how her course was altered?—No, because we do not know the position of the side-lights.

2493. *Here* is a case: You can see the masthead light, immediately below it is the starboard light, and *here* is the port. You will see now by my turning that illustration round two or three points, that so far as the relative position of the two side-lights and the masthead lights are concerned, it makes no change whatever?—No. But if you do *that* it will. [*Describing.*]

2494. Exactly. Now we will come to the point. Supposing that was the case, where the side-lights are below the plumb of the masthead light, you suggested there should be some fixed position, and the side-lights should either be before or abaft the masthead light?—No, not before. I am very much against that; either in a line or abaft.

2495. We will assume abaft?—*Here* is the masthead light. *That* is the port light. *This* is the starboard light. We will assume for the moment that this is an angle of 45°—as you expressed a wish that there should be something definite agreed upon by all—now you are meeting this ship end on, and she starboards?—Yes, you see at once.

2496. There are very few degrees difference between the relative positions of the masthead light as compared with the position of either the starboard or the port light. Assuming you still can see them, that would give you an idea that *this* ship was coming *so*?—Decidedly you can see them. You could see how she was altering her helm at once.

2497. By reason of the side-lights not being under the plumb of the masthead light?—Unquestionably.

2498. That being the case you would advocate that the side-lights should be placed at some definite angle abaft the masthead light?—Yes, at some definite angle, but my point was to agree first of all that there shall be a universal relative position of the side-lights to the masthead light of a steamer, and then I think the question of what that position ought to be should be properly threshed out.

2499. But have you thought out the matter as to the angle of 45°? We all know what a perpendicular line is, and we all know what a horizontal line is, and if an

angle of 45° could possibly be arranged, then it would be fixed in your memory?—Yes, it would amount exactly to my principle of taking the beam of the ship, because the beam of the ship would regulate it considerably.

2500. Taking the beam of the ship would affect it?—Yes. Of course in the smaller ship with a small beam you cannot get such a high light for the masthead light.

2501. But is it not the fact that the masthead light is placed very much in proportion to their beam?—Certainly.

2502. Would there not be some difficulty in making this arrangement? For instance, some ships have only two masts and others have four; again, in some ships the sidelights are not placed with any relation to the masthead light, but simply wherever the captain's bridge is?—Yes.

2503. Let us put that aside for the moment, and say that a ship had double side-lights; say for arguments sake that *that* is the captain's bridge, and *there* is the rail; supposing *this* is the starboard side, and you have the side-light down *here*, and at an angle of 45° up *here* you have another side-light at the side of the ship, would that answer the same purpose, because as this vessel turned round if you were dead straight ahead of the ship each side-light would be exactly below the other one?—I do not just follow that. You have got a green light.

2504. Two green side-lights, one above the other, but at an angle of 45°; in other words, if you saw the two green lights in *that* direction would you not in the dark know that you were exactly abeam of that ship?—Yes, if that was universal.

2505. And assuming that that rule was universal, and you had the two side-lights as I have shown you, if you saw the two side-lights at an angle of 45° you would see therefore that that ship was exactly crossing your beam?—Do you mean to do away with the masthead light?

2506. I am mentioning this to you with reference to the difficulty there would be in placing the masthead light always at an angle of 45°?—There would be no difficulty. Very few masthead lights are carried on the mast, they are carried on a stay.

2507. But where is the stay fixed if you have not a mast?—Oh, but you must always have a mast, though you do not keep it in the same position. You can always move it to get your angle.

2508. But suppose the mast is so near your bridge that you could not place the masthead lamp sufficiently far forward?—But your stay will keep it right.

2509. Are you in favour of the masthead and the side-lights being at some uniform, recognised, or fixed angle, or do you think that if there were great difficulty in doing so these double side-lights on either side of the ship would meet it?—Certainly not. You would revolutionise the whole of our mercantile marine. We have enough to do with lights now without having that.

2510. I am merely following out your remarks with regard to the masthead light?—And another point is, in those bad times you would have more lamps for these tramps.

2511. (*Rear Admiral Andoe.*) It is a very objectionable thing, is it not, to have any glare of light, or any light thrown on the bridge on a dark night?—Undoubtedly. That is my objection to the lights being on the bridge.

2512. Even if the lights were further abaft and on the same plane as the bridge, or below it, it would throw a certain amount of glare, would it not, on the bridge?—Yes.

2513. Therefore the right, as I understand you to say, should not be abaft the bridge at any rate?—Not if it could be helped. I say that once having recognised the fact that some universal principle should be established for the carrying of those lights in the relation of the masthead light, then my argument is that the whole of that should be properly threshed out by practical men. I would have two or three captains of tramps up here to help fix the position, and captains of small boats too, and go through the whole thing properly.

2514. One point is that you should not have by any means any glare from the lights on the bridge?—That is one of my arguments. That is why I was inclined to the perpendicular plan, because I know now from practical experience that it is a great benefit to have a light 50 or 100 feet before the bridge, where there is no glare to interfere with the officer's eyes.

2515. It is very distressing, is it not?—Yes. Even now, when you are getting into hazy weather there is nothing more distressing than the glare of a green light in a haze. You can see nothing through it.

2516. Therefore, supposing the lights are placed on or near the bridge, you would regulate their position relatively to the masthead light by moving the masthead light away from the other lights at a certain angle?—Well, if they are on the bridge they are not far enough aft. You would find they would require to go forward of the bridge in most steamers.

2517. Or would you prefer to have them in front of the bridge?—Oh, certainly.

2518. (*Captain Thomson.*) There is a question another member of the Committee wished me to ask you. Take the case of two ships meeting on opposite parallel courses with their side-lights screened to 4°, and they both see each other's side-lights, would you prefer that both ships should port, according to the rules of the road, or that they should go on their courses? I must tell you that distance is half a mile (*describing with the models*)?—I am afraid that supposing the two ships were going 16 knots an hour they would be together in half a minute pretty well. I am afraid that is exactly what would happen. And that is my argument against the screening of the lights across the bows, that they would both say "We must port." The half mile is so very close, and they would have a very close shave when they came up *here*. That is my argument against the screening across.

2519. Then you would prefer to stand on?—No, the rule of the road would compel me to port if I saw all the lights.

2520. I must tell you the distance is worked out *here*. The clearance you would have, if you stood on your course, would be 135 feet?—Yes, but that is just my argument. If the lights were not screened across the bow I can only see the green light. Then, as I said before, any prudent man would starboard a little.

2521. That is not quite the point you see. What I wanted to ask you was, whether you preferred to port in that case or stand on?—I am bound to port. I see all three lights, and according to the rule of the road I am bound to port, practically, because with 4° they would say that the ship was ahead.

2522. Having ported, do you consider the two ships would pass more or less apart than 135 feet?—That depends upon the rapidity with which they answer their helms. If they would port long enough they would go that way.

2523. You understand what the question is?—Perfectly.

2524. Can you tell me what distance you think you would pass when in that position, roughly?—I cannot. It depends upon the way you steady your helm.

2525. (*Chairman.*) Perhaps you can tell me this from your practical experience. What idea can you give me of the course which a vessel actually does pursue when her helm is ported or starboarded?—There is no doubt that the first action of the helm upon any ship is to throw her stern over, not her bows.

2526. Supposing now you assume that vessel starboards her helm [*describing*]. Can you move that vessel at sea as you move the models?—Much depends upon the rapidity with which she is going.

2527. Supposing she is going 16 knots an hour?—She would go *that* way very rapidly when you put the helm over. But then I do not know what we are doing. We require to do this on a scale. *This* is a ship, and *that* distance is only four times her length. In four times her length a ship going 16 knots ought to alter *that* way about 3 points.

2528. It has been suggested to me, and I have often heard it said, that a vessel feels her helm and goes away at a much sharper curve after a little bit than she does at first?—Oh, yes, because everything depends upon your steering gear—steamers sometimes have very rapid steering gear. We now have in some of our ships the steam gear right aft, and it just opens with a little valve. You can put the helm over in 30 seconds. Of

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course the ship goes gradually till the helm is hard over. Then when the helm is hard over she goes faster.

2529. What I was rather suggesting was, that if you have vessels as near as half a mile, and they are, so to speak, porting across one another's bows, the danger is considerable unless their helms act pretty quickly?—Just so.

2530–1. I understand that you attach considerable importance to the style and the class of lamps being supervised by the Board of Trade, so as to ensure, at any rate, a fair amount of excellence?—Yes.

## Wednesday, 22nd May 1895.

PRESENT:

SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

*Vice-Admiral P. H. Colomb.*

22 May 1895.

Vice-Admiral P. H. COLOMB called and examined.

2532. (*Chairman.*) I believe you have studied the question of lights, from 1858 until 1863 especially?—Yes.

2533. You were dealing, were you not, for the Admiralty, with the general question of the rule of the road in 1867?—Yes.

2534. And your attention was especially called to the question of side-lights by the loss of Her Majesty's ship "Amazon," and the steamship "Osprey," which occurred in that year?—Yes.

2535. I think you watched the case for the Admiralty before the court-martial, and advised with counsel for the Admiralty before the Admiralty Court?—Yes.

2536. What were the causes to which, in your judgment, the loss of those two ships was due?—I thought it was due to the defective state of the law in compelling port helm under conditions when port helm was clearly dangerous; and, secondly, from the defective screening of the side-lights, which allowed the "Osprey" to see the red light, and the red light only, of the "Amazon" at the time when, as far as the "Amazon" was concerned, it was believed that she was on the "Amazon's" starboard bow.

2537. I do not know if you remember sufficiently, but would you tell me very shortly what the nature of the case was. I have not the incidents of it in my mind?—The nature of the case was this: the ships saw one another a great distance apart—at least 20 minutes in time; the "Amazon" observing a steamer's mast-head light on her starboard bow starboarded a little to keep her sails full; the "Osprey" on her side, seeing the mast-head light of the "Amazon" and soon after the red light nearly right ahead, began to port her helm; presently the green light came into view, she saw both together and then the green only, and continued to port her helm, so that the two ships were running with the "Osprey" on the starboard bow of the "Amazon," and the "Amazon" on the port bow of the "Osprey," and that went on till the "Amazon" ported, but too late to avoid the collision.

2538. Did the "Osprey" run into the starboard side of the "Amazon"?—The "Amazon" ran into the port quarter of the "Osprey."

2539. I think that in conjunction with Rear-Admiral Brent you examined every case tried in the Admiralty Court for the last 10 years?—Yes.

2540. And did that examination confirm the conclusion that you had arrived at in connexion with the previous cases?—Very fully.

2541. I think you and Admiral Brent drew up a pamphlet showing the large per-centage of collisions directly due to the defective law and the defective screening?—Yes.

2542. Then, in February 1868, I think you delivered a lecture, did you not, to seamen and shipowners, which the late Mr. Thomas Gray attended, upon the subject of side and mast-head lights?—Yes.

2543. Did you exhibit screens as usually fitted then, with various types of side-lights, and did you explain how most side-lights showed for a point on the wrong bow, and how the better the lights were the worse they were screened, in consequence of their increased size?—Yes.

2544. And I think you also pointed out, did you not, the danger that arose from that imperfect screening?—Yes.

2545. Did you explain how, by means of a chock at the end of the screen, the inner edge of the wick and the outer edge of the screen should be brought into a line parallel with the keel?—Yes.

2546. And you explained also that as a flame had a certain diameter it was impossible that the whole of it could be seen right ahead of the light and none of it on the wrong bow?—Yes.

2547. And you also, I think, stated that owing to the impossibility of making red and green equally visible in all states of the atmosphere, there was great danger of only the wrong light being seen unless the arc was restricted in the manner explained, which was entirely in accordance with the law?—Yes.

2548. What did you understand to be the view of Mr. Gray at that time?—I thought that he entirely accepted the view which I put forward, and entirely agreed that proper screening was that the line joining the outer edge of the screen and the inner edge of the wick should be parallel to the line of the keel.

2549. So that I presume you were surprised when the explanatory clauses were issued limiting the port helm to cases where both side-lights were seen right ahead?—Yes.

2550. Did you think it had been quite understood that the law contained in Article 3, sub-section (*b.*) and (*c.*), was to be as strictly carried out as possible, in which case both side-lights ought never to be visible to one pair of eyes except for mere moments of time?—That was my view.

2551. I think you took occasion to remonstrate upon the lines which had been pursued?—Yes.

2552. Then I think you came to understand, did you not, that instructions were given to surveyors to screen the lights so that the inner edge of the wick and the outer edge of the screen should be in a line parallel with the keel?—Yes.

2553. That was your view?—Yes.

2554. I think you took an early opportunity of drawing the attention of the Admiralty to the screening of side-lights of war ships, and a correspondence took place upon that subject?—Yes.

2555. You watched, did you not, for the results in the records of collision cases as they occurred from time to time. Now, what did you observe with reference to those cases?—I think I used to look at every case in days gone by, whenever it was reported,

and the conclusion I came to was, that it was quite clear that the screening of the side-lights and the explanatory clauses and the law together had practically banished the law of compulsory port helm; and the cases in the Admiralty Court were very rare where compulsory port helm was held to be correct; that the cases in fact became what are called "crossing" cases, instead of "end on or nearly end on" cases. I also noticed, and as far as I know that still continues, that in the reports of the evidence given by the witnesses they have ceased to see both side-lights with the same frequency that they used to see them in former years.

2556. I think at a later period your attention was drawn to the Instructions to Surveyors of 1875, was it not?—Yes, I think so.

2557. Did you notice what appeared to you to be two discrepancies in those instructions?—Yes, if I recollebt right, the discrepancies were brought to my notice, but I do not recollect how. The discrepancies were at pages 79 and 80; the diagrams 6, 7, 8, and 9—I m speaking of the edition of 1875, which I have before me—did not agree with the text; that it was stated in the text at page 82 "Surveyors will probably find that "if the inboard edge of the wick touch a line that is "parallel with the keel of the ship, and that cuts the "outer edge of the forward end of the inboard screen, "the rays will cross suitably." The discrepancy was that none of the diagrams showed such a line. Secondly, that there was a discrepancy in the omission of reference to the law which directed screens to be placed so as to prevent these lights being seen across the bow, and in stating that for both lights to be seen ahead it was necessary that the red and green rays should cross at a certain distance ahead. That seemed to me to be making the screening of the lights suit the explanatory clauses which were really at variance with the fundamental order as to screening.

2558. However, I think you did not consider those matters of very great importance so long as the compulsory port helm had practically disappeared?—Quite so. I used, as I say, to examine every case, and it seemed to me satisfactory that the seeing of both lights had practically gone, and the port helm had practically gone with it.

2559. I think the conclusion which you came to with regard to those instructions was that the diagrams and references to the lens at page 82 were only mistakes?—That is what I thought, because otherwise, if the word "lens" were substituted for "wick," it would, of course, make the screening depend upon the size of the lantern. In which case you would have worse screening the bigger the lens was.

2560. So that a small lens would limit, and a large lens would extend, the crossing angle of the light?—Quite so.

2561. I think in your view, as far as you are able to judge, Mr. Gray agreed with you, did he not, as to the proper screening?—Yes, entirely.

2562. And you thought that the whole difficulty had arisen from the issue of the explanatory clauses before it had been thoroughly understood that the common sight of both side-lights together was due to imperfect screening?—Quite so.

2563. In your judgment do you think that anything more is necessary than to make it a rule that the inner edge of the wick and the outer edge of the screen should be in a line parallel with the keel?—I think nothing more is necessary.

2564. And that is in substance the view you wish to present, is it not?—Entirely.

2565. I think you for a considerable time considered the question of minor importance, did you not?—The question of the screening of the lights?

2566. Yes?—Yes. As soon as the screening had limited the arc so that the seeing of both lights practically disappeared at sea—and I should say that I took opportunities whenever I was at sea of watching every ship I could, and I found that, as a rule, the ships I met at sea only showed their two lights together just for an instant of time, and I thought that when that end was achieved the whole thing was achieved—I did not want to meddle with that any more.

2567. (*Mr. Bolam.*) Would the Admiral give the dates of which he was speaking just now of his having been at sea and noticing these lights?

2568. (*Chairman.*) Yes, please?—Constantly when crossing the Channel, whether to Ireland or to France, up to 1889, and in the year 1889 particularly, when I was attached to the "Rodney" as umpire in the Naval Manœuvres.

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2569. I do not know whether you have had your attention called to this: that it is suggested by the Board of Trade, as the result of experiments, that if the light is screened as you suggest to the inner edge of the wick, that the full and uniform power of the light will not be seen for the whole ten points, that is to say, it will not be seen to its full power ahead of the vessel?—I think it will be seen for the full ten points, but of course you may say that exactly in the line of keel some of the light will be lost; that is, that the full light will be seen ahead of the light, but not in the line of prolongation of the keel.

2570. You know, of course, the rule says there is to be an unbroken light. You would attach importance, I suppose, to the full power of the light being seen ahead, without drawing the distinction between ahead of the keel and ahead of the light?—No, I must draw the distinction, I think, between ahead of the light and ahead of the keel. I do not see any necessity for making the full light show ahead of the keel.

2571. That is what I meant; but you would attach importance to the full power of the light being shown ahead of the light?—Certainly.

2572. Do you attach any danger to what is called the "dark lane" which it is said would be formed by a light being screened in that way?—None at all. As I say, watching ships at sea entirely with a view of establishing the case which is before the Committee, I have never seen that dark lane, and yet I have only seen both lights for a mere moment of time, and in some cases not even together. I think that owing to the yawing of the ship; I do not care how well a ship is steered, she will always show first one and then the other light. There is no such thing as a dark lane with properly screened lights.

2573. I daresay you have often heard the Board of Trade argument that unless the lights to some extent cross the rule or rhyme as to green to green being perfect safety cannot be observed?—I think it is the other way. I think if you allow the lights to cross more than you can possibly help that this result commonly follows—I know from examination of cases that it does commonly follow, and I think it might be expected to commonly follow—it is very difficult to get the green light to show up to the same power as the red light, and if you have it right in one state of the atmosphere it will not be so in another state. You cannot guarantee equal power in the two lights. Now if the lights cross, you get a case such as you had in the "Amazon," that is to say that the more powerful light is seen alone, when according to theory both are seen; you practically ought to be seeing, from the way the lights are screened, both lights, but you are only seeing the red light because of the difference in power—the difference in penetration—of the lights, and you are seeing it on the wrong bow.

2574. So I understand your view to be that the right thing to do to comply with the International Regulations is to screen the lights so as to cross as little as possible?—Clearly so. That is to say, that you should get the full light ahead of each light, and then never mind about the crossing. You must have that. You see you cannot, according to the diameter of the wick, possibly avoid the crossing, and there will be a certain amount of that whatever you do; but you ought to reduce it, I think, to the minimum.

2575. I see you recommend the screening from the inner edge of the wick. Of course the same results can be obtained by screening from the outer edge of the wick, allowing a larger angle. I do not know whether you have any preference for screening with reference to the inside of the wick rather than screening with reference to the centre, or the outside of the wick?—I have a distinct preference for the inside of the wick, because then I am not troubled with the size of the wick, the diameter of the wick. The moment you begin to deal with the outer edge of the wick you are coming to the question of the width of the wick itself. If you have a very wide wick you have one result, and if you have a very narrow wick you get another result. You may have your lamps, for instance, sometimes with a circular wick, and sometimes with a long wick, which may be placed, perhaps, in the line of the keel, or at 45° to the line of the keel, or at right angles to the line of the keel. In all those cases, as long as you are dealing with the inner edge of the wick you know what you are about. All you know is that the extent of the

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wick, the diameter, if it is large, will show the light more across the bow, and if it is small less across the bow. But I do not think you can go to a greater nicety than that. It does not seem to me practicable.

2576. Of course, as regards electric lights, the question does not arise. The filaments of the electric lights are so fine that I suppose there you would be satisfied with the chock coming up to really any part of the film of the electric light?—I do not know how it would be with the arc light. I have never really tried experiments upon that head with the arc light, but the diameter is very small. The incandescent light however has a sensible diameter according to the number of convolutions in the filament and how they lie with reference to the line of keel.

2577. Of course, then you would follow the same principle, and screen to the inner edge as a common rule?—Yes.

2578. (*Rear-Admiral Andoe.*) Do you think that seamen as a rule were fully aware that from all times, as far as we know, the rays of the light crossed the path of the ship at a considerable angle?—My impression is that seamen did not think very much about it. I think that really is so; those that have examined, I think must know that it is so.

2579. But of course if the wick is an inch and $\frac{3}{8}$ths we will say, or a broad wick, and the screen set as you propose, parallel with the keel, it gives an angle of something like 2° for the light to cross the bows?—Yes, that is for the extreme outer edge, but of course this represents an infinitely small amount of light. As your screening acts, it cuts off portions, as it were, so that you have got very little light going across. Supposing the extreme edge goes across 4°, that which goes across 4° is a very small amount of light; a little more goes across 3°; a little more goes across 2°; a little more goes across 1°; and the whole of it goes right ahead of the light; it is gradual.

2580. But still there is a very considerable angle at which the light would cross the bows on the path of the ship?—Yes.

2581. And in the electric light that angle would be very much reduced, would it not?—Yes, in cases.

2582. Vessels yaw when they are being steered, the best ships 2° or 3° each side of the course, and we are told the ocean tramps as much as a point, or even a point and a half, they steer so wildly. Supposing you were in charge, we will say, of an ocean tramp, and she was yawing a point on either side of her course, and you saw a large mail steamer coming down, say, a quarter or half a point on your starboard bow, showing nothing but her green light, you naturally would keep your course, I presume, or possibly give starboard helm to give her a little more room; but the ship coming down towards you would see your two lights, red and green, first one and then the other, or possibly both?—Yes, but I should be very cautious about starboarding.

2583. Seeing both your lights right ahead, she following the rule of the road, would port her helm, therefore the big ship coming down, the mail steamer, would be giving port helm and the tramp, having only seen her green light, due to her steady steering would be giving starboard helm to keep out of her way?—Quite so; if she starboarded.

2584. How does that case occur to you with reference to fine screening. The mail steamer would have been fine screened to, say, 2°, and steering steadily?—I think it devolves upon the mail steamer if she continually sees the change of lights in the tramps to be cautious as to what she is doing it is only the law of port helm which makes the danger. It supposes you to know that the other ship sees both your lights, whereas you cannot know. In the case of approach such as you suggest can you possibly make sure in one ship what the other ship thinks?

2585. The Board of Trade officials contend that by the lights crossing at 4°, for instance, the tramp in the case I have mentioned would see both the red and the green light of the mail steamer approaching her, and would consequently port her helm to clear her, and she likewise would give port helm, having seen both lights of the tramp, and they would clear one another?—This sort of thing lies at the bottom of the great mass of collisions. You must understand, first of all, that when you get within certain distances, if there is any considerable angle between the courses port helm for both will cause a collision for certain; whereas the starboard helm for the one and port helm for the other that is, turning towards each other, will make a collision absolutely impossible. I have all along endeavoured to abolish that compulsory port helm, first, because its safety entirely depends at a distance upon the two ships being agreed, which is an agreement it is impossible to get; and, secondly, if they are both agreed, and yet their courses cross at some angle, and they are pretty close to one another, if they both port their helms they will certainly collide. But if they obey the signals which would be made by properly screened lights, and the one starboards to the green light, and the other ports to the red light, it becomes impossible for these two ships to come into collision.

2586. Supposing that this very fine screening were adopted, we will say, and both ships had electric lights, and screened so that the light should not cross the bow at any appreciable angle, and that they were approaching one another green to green, so that each saw the other's green light nearly right ahead, what would be the proper course in that case for both ships?—The proper course? If you look at the great number of collision cases, you will see this: that whatever the screening is, or however it is arranged, a green light very nearly right ahead, or a red light very nearly right ahead are dangerous lights to alter the helm to. They both are exceedingly likely to change, and in truth such a light nearly right ahead is safer there than broader on the bow.

2587. But seeing the green light and not the red light in such cases, what action would you take?—"Stand by" to the engines, and possibly reduce speed. I would not touch the helm.

2588. You would not? You would go straight ahead?—Certainly.

2589. Then if you did that you would probably come into collision, would you not?—No.

2590. You would go very close?—No, I do not know any case where such a thing has happened; if the light does not change it moves away, and you are clear.

2591. You must do something to get clear of one another?—No, because to make a collision the ships must be very nearly on opposite courses, and very nearly on the same line; now that very rarely happens.

2592. That is what I presume. They are within 2°, or, say, a quarter of a point of ahead?—Yes, but the courses must be nearly opposite; that does not occur, that is a case you do not find.

2593. The Board of Trade people contend that if the fine screening were adopted it would exactly lead to what I have indicated, that, following the doggerel verse of "Green to green, red to red, perfect safety, go ahead," many officers in charge of vessels would simply do as you mentioned just now, continue their courses until they got too close for safety?—I think that is a pure fiction. There is no such thing in the record of collisions.

2594. It may be presumed that each officer in charge of the deck would starboard his helm, and thereby keep clear?—What generally happens before collisions in cases such as you speak of is, a man sees the green light nearly ahead, and starboards to give it a wide berth—not much.

2595. I say gives a little starboard helm?—Yes exactly, and then this follows: the green changes to red and he goes on starboarding or puts his helm hard a starboard, and then a collision ensues; or else he sees the red light nearly ahead or a very little on his port bow, and he ports to give it a wide berth, and the red changes to green, and he continues to port, and the collision occurs.

2596. I do not quite follow you. The particular case in point which I wish to stick to is, green to green, a quarter of a point on the starboard bow; you cannot see the port light in either case and you must do something to avoid a collision, because you are approaching one another very very close. If you do not come into collision, at any rate you go a great deal too close for safety. The position in that case would not give you a fair idea. He does not see the port light—he does not see both lights—he only sees the green light, he cannot run into the ship?—If he thinks his danger is great he should stop his engines or reverse his engines; he ought not to alter his helm because experience shows it is dangerous.

2597. Why should they not both starboard their helms?—No, because it is most likely if he does starboard his helm he will see the green change to

red; you cannot properly say "both," because no one has the control of both.

2598. I do not see how that could be?—It is a fact anyhow.

2599. (*Chairman.*) I will try and see if I can understand it by a couple of models?—I do not really know that models will help us, because I am only stating what happens.

2600. Would you mind just looking here. Now, what I think Rear Admiral Andoe is putting is this (*describing with the models*). Supposing you are on that ship, and have another ship very fine on the starboard bow, and you saw his green light, what should you do?—I should keep on and watch, and if I did not see the green light alter its bearing I should stop. If it did not then alter its bearing, then I should reverse; I should watch to see whether the green changed to red or passed away on the bow.

2601. (*Rear-Admiral Andoe.*) You are only seeing the green, not the red?—Yes, but the point is this: I know from looking into—certainly over a thousand collision cases—that I should expect to see that green change to red or pass away on the bow.

2602. I do not see why it should change. Supposing they both starboard just a touch?—Yes, but you have to recollect that the officer in one ship does not know what is passing in the mind of the officer of the other ship. That is his difficulty, you see only the green, but you cannot tell what the other sees, he generally sees what you do not expect.

2603. They each of them see the green?—But how can one know what the other sees?

2604. We will presume that they are fine screened. Take two large mail steamers coming down steering a very steady course, I presume that?—Yes, but then you must put your knowledge into his head, and you cannot, it is not possible.

2605. He only sees the green light?—Quite so; but you do not know that he sees it.

2606. (*Chairman.*) May I put it in this way; if the lights are screened fine, theoretically, these vessels being on exactly opposite courses and approaching each other 2° on each other's starboard bow, the result will be that each vessel will only see the green light of the other?—You know, as regards the question of the fine or coarse screening, it is merely in this case a question of whether the parallel and opposite courses are near or far from each other.

2607. Exactly; that brings us to the point; which do you think is the best thing, that the lights should be screened fine, or that the two lights should be seen at a larger angle?—I have not the slightest doubt that the fine screening would be right; although we say that A sees the green light of B, and that B sees the green light of A, because they are finely screened, and we say that would be different if they were coarsely screened, I say how do we know that? I do know this, for certain, that if they are coarsely screened A may very probably see the red light on his starboard bow; he may not see the green light, because it is not strong enough to show.

2608. (*Rear-Admiral Andoe.*) Then you presume that the green light crosses the bow. I presume, on the contrary, that it is a mere point of light, screened by a screen which is parallel with the line of the keel, and cuts the light off almost in a line with the light itself; it merely shows straight ahead, and does not cross the bows at all. I am giving you an extreme case of course. I will tell you why I ask the question: because the rule which sailors go by, we will say mates in tramps, is a rule of thumb; they do not argue these things out much; "green to green and red to red, perfect safety, go ahead," and he goes on his course. Whereas now, with the lights screened to 4°, they both put their helms a-port, and go away from one another. That is the reason I ask the question, because if they both saw the green light, I should say they would both starboard and go away; but at present it is not laid down in the rule?——

2609. (*Sir E. Harland.*) I think, Mr. Chairman, that Admiral Colomb told us that although they were green to green, and not red to red, they would both slow their engines, and then I think Admiral Colomb ultimately said he would see the red light. Now is that the point?—No, I hardly say that. My view is that we ought to limit the screening as much as possible, because the danger is, that A properly ought to see the green light on her starboard bow, but because the red light crosses the bow and shows, because it is more powerful than the green light, A only sees the red light when she ought to see both lights.

2610. (*Captain Castle.*) But under those circumstances would not A port, seeing the red light?—Yes.

2611. And then she would go clear?—No. For B only sees the green light and does not port.

2612. But then in fact, porting would show her red light?—You see I am not speaking in the least from anything theoretical. I do not believe in theories much

2613. I am speaking as a sailor; if you port you show your red light?—Yes, but if we look into collision cases, what happens is this: if ships are on parallel courses, and originally clear of one another, A, seeing a green light nearly ahead, we will say, gives a little starboard helm to give B a wider berth. B in the meantime has seen both the side-lights of B, because they are coarsely screened. B ports and A starboards. Then you have the collision.

2614. (*Rear-Admiral Andoe.*) That is exactly the case I mentioned just now. We will say *that* is a mail steamer steering a steady course down *there*. She sees a tramp yawing about as she comes along like that. They are showing their lights in *that* way. That is what they do in practice. *This* one only sees the green light, and, consequently, is inclined to give her a wide berth like *that*, but *this* one having seen both lights, ports her helm to go clear. They go like *that* because *this* one is fine screened, and *this* vessel has not seen her two lights (*describing*)?—Yes, but I do not think, whether screening is coarse or fine, you get the light; as far as I know, the more coarsely you are screened the worse it is; certainly in the Admiralty Court the cases show that that happened much more frequently when the lights were screened over 4° than it does now.

2615. I suppose that before the chocks were placed upon these screens that the angle at which the lights crossed was very much coarser than after the chocks were placed, speaking generally?—Clearly. My memory is bad for figures, but I think most of the ships I tested before there were any chocks showed 1 point on the wrong bow.

2616. Over 11°?—Yes.

2617. Have you any knowledge of how they were screened subsequently, at about what angle from the inside of the wick?—Well, I have only got what the Board of Trade were good enough to furnish me with when they recently examined, and of course it was varied; but the number of degrees was very small as a rule.

2618. (*Captain Thomson.*) I should like to ask you if you see ambiguity in the expression as applied to the side-lights "over an arc of 10 points from right ahead to 2 points abaft the beam?—I never did see any ambiguity about it until it was pointed out to me that in the Admiralty Court they did consider——

2619. I am asking you, sir?—It has been put into my mind that there was an ambiguity. I never saw it. I thought "right ahead" meant right ahead of the light, because otherwise the arc must be more than 10 points; from 2 points abaft the beam to right ahead must be right ahead of the light, not of the keel.

2620. Do you think that "right ahead of any point of the ship" is a line of direction parallel to the line of the keel?—I thought it applied to the light; taking the two things together, taking the arc they were supposed to be shown over, and that they are not supposed to show across the bow, and I thought it made it quite clear.

2621. Do you think that that holds good generally in a ship?—Oh, no.

2622. It would not hold good for a point outside the side-light if there was a point outside?—Generally. What you mean is, would I suggest a better wording? I should say it would be quite easy to have better wording.

2623. As the present rule of the road says that ships at night time are to alter their courses to starboard when they see the two side-lights of another vessel nearly right ahead, do you think it necessary that the screening should correspond with the proper limit to be given to the angle of nearly right ahead?—I am afraid I do not understand you.

2624. The present rule of the road enjoins that ships at night time are to alter their course to starboard on

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approaching a vessel both of whose lights they see in the position which is nearly right ahead. That nearly right ahead cannot mean strictly right ahead?—No.

2625. Therefore, that difference between nearly right ahead and right ahead must subtend a certain angle?—Yes.

2626. Whatever that angle may be?—Yes.

2627. As that is a certain angle do you think that the screening of ships' side-lights should correspond with that certain angle?—No; but then, you see, I believe myself the law ought not to be as it stands. I believe the mistake is in the law.

2628. But assuming that we know the law as it is at present?—Then all I should say is, restrict the action of the law as much as you can; do not widen it.

2629. You would narrow the meaning of right ahead as much as possible?—Yes.

2630. But, having narrowed it, would you screen your lights to that narrow angle?—I should screen my lights without reference to that law at all.

2631. Then do you not think it possible that a ship may see only one light of another vessel which is nearly end on to her?—I should try to prevent her from seeing both lights.

2632. Then, of course, the port helm rule does not apply?—Quite so.

2633. In view of the law which defines an overtaking ship and a crossing ship on the starboard side, or defines the difference between them to depend on whether one ship overtakes the side lights of the other ship, so to speak, or crosses the angle of screening of the side lights abaft the beam, do you think it necessary that the side lights should be screened accurately to two points abaft the beam?—No, I do not. I should, perhaps, point out, as I said before, that all these questions with me are not theory. It is not the theory of the thing I speak of, it is always the practice; and I say this, that only 3·6 per cent. of the collisions happen between ships approaching from the same semicircle of the compass; the other 96·4 per cent. are where the approach is from opposite semicircles. Therefore, you see, I cannot lay any particular stress upon dealing with the overtaking clauses, because they do not really affect the safety of shipping.

2634. I think you said that when the screening became finer, or became, as you thought, parallel with the keel, that the port helm practically went with it or disappeared?—Yes.

2635. That was because if ship's lights were screened strictly parallel with the keel port helm would disappear entirely?—Decidedly.

2636. Ships meeting end on to each other one might port and the other starboard?—No, I would not put that, because they would have a greater chance of only seeing the right lights.

2637. I do not quite follow you there, because it seems to me that if the port helm disappears you have two remaining cases; one is where both starboard their helm, and the other case is where one ship starboards and the other ports?—No, it is not quite that; you become more sure of safety when you have port light to port light; when you know that the screening is narrow you are pretty sure that you are not looking at a green light as well but that it is not powerful enough to show, and *vice versâ*, when you see a green light on the starboard bow you are pretty nearly certain you ought not to be seeing the red; whereas, if you have coarse screening you cannot be sure. The safety signal is, of course, red light on port bow and green light on starboard bow.

2638. You do not attach any importance to the rule which makes two meeting ships alter their courses to starboard?—I think it was a bad law, because it was ruinous for years and years to shipping.

2639. The importance you attach to it is a negative one?—A negative one, because we have got clear of it very nearly.

2640. Do you know that with powerful electric light the screening at long distances can be made extremely accurate?—I suppose that would be so.

2641. And do you know that at moderately short distances the diffused light from the powerful electric light crosses to the extent of 8°?—I should quite suppose that, because that is the case with oil lights, ordinary lights, any lights.

2642. Suppose you had an electric light of 200 candle power visible at 600 yards to 8° of crossing beyond its screening line, and at, we will say, three miles distance, it is seen correctly screened, how will you reconcile those two differences?—You cannot. All one's experiments with ordinary lights show you the same thing, that, as you approach, a great deal of the secondary light, the badly reflected light, shows across; but the rays are not strong enough to show any distance.

2643. Do you consider the question of screening to be of most importance at long distances, or at moderately short distances?—I should think it was most important at long distances; but if you have lights that will show across the bow at short distances, of course there would be great danger, you know, in fog or misty weather coming close upon them and seeing the wrong light; but, on the whole, I should say long distance is the thing to go by.

2644. Yet is it not a fact that at long distances ships are able to watch the bearings of lights which will inform them of the course a vessel is pursuing?—Yes, exactly.

2645. But at short distances you cannot always do that?—Yes, but with screening at long distances, does it not follow you are pretty safe at short distances, except the case you have mentioned of electric lights?

2646. But in the case of oil lights you see them also diffused across the bows?—You do, but at such short distances that generally collision would then be inevitable.

2647. But the only difference in the case of lights which have a wick is, that the difference in the appearance of the light, between the screening line and the angle to which it is seen, is a gradual one?—Yes.

2648. You really cannot tell when you cross the screening line with a colza oil lamp—you cannot tell?—Quite so, because the light is only somewhat dimmer; it gets dimmer and dimmer as you get further from it.

2649. Whereas, with an electric light you may have a filament horse-shoe shaped, which may be turned in the fore-and-aft line of light, and be screened mathematically?—Yes.

2650. I find in my own experiments that at a distance of 600 yards, lights could be screened to 2 feet very nearly?—Yes; then I think that you could do that very nearly with a flat wick parallel to the keel, but then you lose light tremendously with that.

2651. Are you aware that in the case of the "Howe" cruising with the Channel Squadron in 1893, when she was exactly in line, right astern, at two cables' distance, neither of her side lights were seen simultaneously, nor could they be seen simultaneously from any part of the bridge by two different observers?—No, I did not know that.

2652. (*Sir E. Harland.*) That means there would be a dark lane.

(*Captain Thomson.*) Exactly.

(*Witness.*) I should like to add this, if you attach importance to it. You know that when ships of that size get within two cable's lengths of each other in most ordinary positions, collision is inevitable. There is a certain distance between the ships within which if you get, no power on earth will stop you, so it is no use you legislating for distances within which a collision is inevitable; you must be nine ship's lengths off as a rule, to be free to manœuvre. The moment you get within nine ship's lengths, then in certain positions, where you are not free to move, you will come into collision if you make certain movements.

2653. (*Captain Castle.*) That is four and a-half, do you mean, for each ship?—Four and a-half for each ship.

2654. (*Captain Hallett.*) You said you were in favour of drawing the line from the inner edge of the wick to the outer edge of the chock on the screen?—Yes.

2655. The fore and aft line?—Yes.

2656. And that was the position you put your lamp in?—Yes.

2657. Do you take into consideration the edge of the lens as well; would you also put the edge of the lens in that line?—No.

2658. Because the lens is cut and just takes the 10 points?—Yes, of course, it may or may not; I should

not agree about that, but the lens has got nothing to do with the wick.

2659. What I am driving at is this: if you made that line go through the inner edge of the wick, the inner edge of the lens, and the outer edge of the chock, then by having the wick in the centre of the lens, as it is supposed to be, you would also have your 10 points cut true with the outer edge of the lens on the side where there is no screening. Have you taken that into consideration?—As far as I know, if a lantern is properly made it ought to be more than 10 points, there should be a margin.

2660. No, it shows 10 points; practically they cut the circle into three, that makes 120°; then there is a certain loss from cutting and from bedding, and it cuts it as nearly as possible 10 points. You have not considered that?—Oh, yes, thoroughly. That question of cutting the lens is a very old one, and I thought we had really got over it, because if the lantern is properly made, and the lens is properly fitted with the wick centrally arranged with regard to the lens, the ray is radial, and therefore will not show beyond the 10 points, and you screen, not to the lens, which is beyond the 10 points, but to the wick, which gives it you exactly.

2661. But you would not insist upon having the inner edge of the lens also defined on that line?—Certainly not, clearly not, it must be more.

2662. It must be inside it?—Oh yes, certainly, it must be over that. There should be considerable margin of lens.

2663. Then you would insist upon your lens being more than 120° ?—Distinctly so, clearly.

2664. You have had a great deal of experience, and you have also made a study of the turning powers of ships under their helms, I believe?—Yes.

2665. With two biggish ships at a distance of half a mile, and running in parallel opposite courses and 4°, that is the angle of screening laid down, on one another's bows?—Yes.

2666. Do you think those ships could put their helms to port and turn towards one another without danger of collision?—Parallel courses?

2667. They are on opposite courses parallel?—Turning towards one another in *that* way (*describing*), clearly not.

2668. They are half a mile apart there. They pass if they continue their courses, at 180 ft.; do you think if they both put their helms down they would approach nearer than 180 ft. as a matter of fact?—It depends upon the sizes of the ships. It would be a mad thing I should say.

2669. You would not consider *that* in anything of a big ship of any speed to be a safe manœuvre?—Certainly not. I suppose you are alluding to one of my claims, that turning towards one another when in doubt is a safe thing?

2670. No, what I am alluding to is the paper which we have before us here, in which they advocate the screening of 4°; because if you screen to 2°, and let them go on green to green, or red to red, they pass within dangerous distances of one another. In fact, in some of these ships of 40 feet beam, with only 1° of screening they will actually collide?—Yes, but then the position is pure theory; there is absolutely nothing in it.

2671. But it is laid before us that 4° is necessary as an angle of screening to enable vessels to pass at a clear distance. Anything under 4° they say put your helm port to port and cross one another's bows. Do you consider that with big ships from your experience to be a safe manœuvre?—No.

2672. (*Captain Barker.*) You said just now that if you had two vessels like *that*, and there was coarse screening, that the red light would be seen before the green?—Might be. It was so in the case of the "Amazon."

2673. And that under those circumstances *this* vessel would perhaps get alarmed and port her helm unnecessarily?—Yes.

2674. But do you not think she would be able to tell which side was showing towards her from the masthead light. Do you not think it would give her the indication which way the vessel was going?—It might; but it does not. I really could not answer such a question.

2675. At two miles that angle at 40 feet would be quite distinguishable; the angle between two objects at two miles, we will say of 20 feet even, will be quite distinguishable?—My impression at the moment is that it is not so. There is not that guide.

2676. You think not?—Those are things you have to think pretty hard about. In the very early days, in 1864 and 1865, there was a great struggle made to arrange the side lights and the masthead light so as to do all that kind of work. But it did not come to anything really, and as a fact it is not so. As a fact, when lights have been mistaken I think that they do not take the masthead light into account; when they get the red light a little on the port bow, a ship nearly always ports.

2677. It is quite possible, I am telling you this as a fact, to distinguish a red and a green light, which are only one foot apart, and are very carefully screened at three quarters of a mile. You can see those two lights distinctly, quite separate from one another. You can see the black space between them?—Yes, it depends upon the power of the light. They must not be very powerful.

2678. Yes, I am speaking of oil lamps?—I have always found that 6 feet was the least to make sure of separating the lights at 2 miles distance.

2679. Of course, we know pretty well that the majority of lights were formerly screened coarser than 4°. That is to say, the angle of screening was rather larger before than 4°. Do you think the finer angle has decreased the number of collisions?—My impression is that the fine angle must always tend that way.

2680. That it has already made a difference?—Well, I do not know, because I have not looked lately. But certainly collision from wrong port helm has decreased since the chocks were introduced.

2681. (*Captain Castle.*) You say it takes a long time to think about this question of the masthead light and the side lights. If it takes you a long time to think about it, what must it take a master on the bridge when he sees another ship?—That is quite true. I do not like the masthead light, you know.

2682. Because it is much easier to do it here than at sea?—Much easier.

2683. In reference to the green light ahead, she is probably crossing, if you see nothing but the green light, and of course, if so, you rapidly change your bearing (*describing with the models*)?—Well, you do.

2684. If she is crossing you must change your bearings?—No, you may not change them at all, and still be crossing. It depends upon your relative speed and the relative distance from the crossing point.

2685. But, at the same time, if you saw no change in the bearing, would you not starboard?—No, I should not.

2686. Not to a green light ahead?—Not immediately, because I should be breaking the law, should I not?

2687. No, I think not. You are not bound to port if you see a green light, and there is no law about starboarding for the green?—Yes, but I should not like altering my helm when I was already safe.

2688. And you say you are safe so long as you see the green?—Yes, when ahead, because you must generally expect to see it change to red, or to pass away to starboard. Therefore it is dangerous to alter the helm.

2689. It is dangerous to starboard, you think, in case the other man ports?—Dangerous objects when you are under way are safer right ahead than anywhere else. It seems ridiculous, but it is so.

2690. Not to remain ahead?—No, but they would not remain ahead.

2691. Of course if you alter your bearing it is all right, though if it remains ahead it is not?—No, but then you have your warning. Nothing does remain ahead; it changes.

2692. (*Chairman.*) That means that when right ahead it is in a condition of getting into its dangerous position?—Yes. Your least danger is right ahead, the risk on opposite courses on the same line is merely the beam; the risk when the courses cross at right angles is twice the length of either ship.

2693. (*Mr. Bolam.*) You said some time ago that in regard to preventing collisions at sea there was a

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mistake in the law—it is your phrase—the law, I understood you to say, was badly put, or inaccurately put?—I said the law was very defective in 1867, and it was in consequence of that defective rule, partly, that the "Amazon" and the "Osprey" were lost.

2694. I understood you to refer to the statute itself, and not to the Board of Trade instructions to carry out that statute, it was in reply to Captain Thomson?—I was specially referring, not altogether to the statutory law but to the interpretation which the Courts put upon it. The Courts at that time declared that "nearly end on" covered a difference of two points in the courses.

2695. Can you tell us how the Admiralty screen their lights?—I do not know—I cannot.

2696. When you have two vessels on parallel courses, and very little on each other's starboard bow, you distinctly object to anything being done with the helm right off?—You do not put the question so that I can answer it from my point of view. I cannot think of *two* ships acting. I can only think of each ship acting separately according to what she sees, and *thinks the other sees.*

2697. Then I put the question in this way: If each ship sees the green light a very little on the starboard bow you object to the helm being what you term "fiddled with" in too great a hurry?—No, again I cannot see it from your point of view. You put the two ships. I cannot go beyond the one ship. I cannot tell what the other ship sees.

2698. Then, if I were your junior officer, and I saw another vessel's green light a very little on my starboard bow, what would you expect me to do?—I should expect you to do nothing.

2699. You would object to my "fiddling" with the helm?—Yes.

2700. You would expect me to wait and see what I could find out. Of what?—Of the movement of the green light.

2701. Of the possible change of bearing?—Yes.

2702. And if I found out that that green light was getting broader on my starboard bow, what should I do?—Leave it alone.

2703. And if I found that the bearing was not perceptibly changing, what should I do?—Give the order to stand by to the engineer.

2704. And if I still found that the bearing of the green light was not perceptibly changing?—I should be inclined to stop and reverse. I should be very cautious with the helm.

2705. Should you starboard the helm at all?—I do not think I should in the case you mention.

2706. Do you attach any importance to the doggerel rule, "Green to green, red to red, perfect safety, go ahead"?—I think it is dangerous.

2707. Then you have never believed in it?—Never.

2708. And do you think that the screening of lights to 4°, assuming that that is a larger angle of screening than has hitherto existed, would be in the direction of conserving that rhyme, which the Board of Trade seem to think is a valuable one? Would the screening of the side-lights to so broad an angle as 4° be in the direction of conserving that rhyme, supposing it were of value?—No, it would be the other way, because of course you might be seeing the wrong light. There would be a greater chance of seeing the wrong light.

2709. Do you think the greater danger is, as you put it in your examination-in-chief, showing one side-light on the wrong side of the ship?—Yes.

2710. (*Mr. Scrutton.*) You attach a great deal of importance to the examination, which appears to have been a very careful one, of the proceedings in the Admiralty Court?—Yes.

2711. Have you found any difficulty in consequence of the conflicting evidence which is constantly given. How have you dealt with that?—Conflicting evidence is comparatively rare. But when it seems so at first and I have given them time enough and pieced it out carefully, and reflected that sometimes one witness is bearing testimony to what happened a few seconds later than other witnesses on the other side, I often find it quite easy to piece the whole thing out. But as a rule, the evidence fully accounts for the collision.

2712. Then your opinion is arrived at in consequence of the opinion you have formed from the contradictory evidence?—No, I do not think I can quite put it in that way. You find certain things; you find in the record of collisions where lights are concerned, there is never collision without porting to the green light or starboarding to the red light. That is to say, where there is not disobedience, distinct and clear, to the signals made by the lights. You prove the case by showing that from the laws governing ships in manœuvring, the movements in question ought to make collision as it is represented to have taken place.

2713. Do you not think it possible for another man, looking at the same set of contradictory statements, to come to an entirely opposite opinion?—No, I say that because another mind (Admiral Brent's) was occupied with mine originally and did not see any difference.

2714. Do you attach any importance to the masthead light and side-lights being required to be put in certain relations to each other?—None at all.

2715. Why not?—Because the avoidance of collision is a perfectly simple thing. To avoid a collision when both ships are under way, you must either do nothing, or else turn towards the danger. No amount of arrangement of mast-head lights or anything of that sort will alter that. All you do want to know is the danger signal.

2716. But would you not admit this; that if the mast-head and side-lights are in a certain relation to one another, as the vessel moves one side or the other those lights are seen in a different position by the opposing vessel?—Yes, I think that is so, and I think possibly at very close quarters, in rivers and so on, where the rule of the road cannot be obeyed because "keeping out of the way" devolves on the ship which by law should keep her course, advantage will sometimes be taken of that, but I do not think to any great extent.

2717. Let us take this: here is an absolute illustration of a vessel that is made to scale. The only thing I am not quite sure about is the mast; but *that* vessel now is directly in a line with your face (*placing a model*)?—Yes.

2718. Is there not a very perceptible difference now (*describing*)?—Of course we have the motion of the ship using her helm, which you do not have when you are showing a single light.

2719. But do not those lights now present themselves to you as the vessel is now in *that* direction, in a very different position to each other?—I quite agree, of course.

2720. And of course *that* way as well?—Yes, quite.

2721. If it were a matter of legal enactment that those lights must be in a certain relation to each other; would not that be an indication to you as to which way the vessel was moving?—Yes, no doubt; but then I do not know that if you had that it would make much difference in the number of collisions.

2722. I only want to get at the fact?—It is clear of course that you get the movement of the ship.

2723. (*Sir E. Harland.*) To follow that point which was put before the Committee the other day. Some of the evidence we had went in this direction: that if, for instance, a vessel were lying off waiting for the tide, and you saw a steamer ahead which was just as likely to be going dead slow, and you saw practically nothing but the green light, and you watched that light, you really would not know by her movements, as she was making very little movement in the water, what course she was steering with regard to you; being, as it turned out in this instance, that this vessel was lying just across your bow. Now if that ship was required to have the mast-head light and side-lights relatively to each other at an angle of 45°——

(*Mr. Scrutton.*) That model is 45°.

2724. (*Sir E. Harland.*) Very well. If you saw that and you knew that it was an intentional arrangement that the lights should be so fitted, would you not be able to conclude that *that* vessel was exactly at right angles with your course (*describing with the models*)?—Clearly.

2725. Then, on the other hand, supposing you saw the green light almost exactly behind the mast-head light, which is now so with *this* vessel, that *that* vessel is almost exactly end on to you?—Yes.

2726. Then would it not be an advantage to you to know the relative position of that ship to you?—In narrow waters, as I said before, all those indications of movements are good, but in the open sea, where the

disastrous collisions come about, when you are both at some speed, you do not really require those sort of things.

2727. Then suppose we take an intermediate position. *There* again, you see, is an angle of half that 45°?—Yes.

2728. Then you would be able to conclude that *that* vessel was steering a course quite clear of you (*describing*)?—Yes.

2729. If, then, you had those three points clearly indicated by this arrangement of the lights—*that* one meaning that the vessel was lying across your bows; the other at an angle of, say, about 45°—if she were under weigh at all, and that she was steering quite clear of you; and, on the other hand, if the lights were relatively almost in identical line with each other, that her bows were dead fair, or nearly so, for yours?—Yes.

2730. Then although such an arrangement of sidelights does not exist, and although you told us that some few years ago there was a strong effort made to that effect which somehow or other fell through, do you think the idea is one which has no bottom in it, and is not worth while considering again?—Well, as I said, every arrangement of that sort is good for close quarters in narrow waters and so on; but I think if you are going to do anything of that sort you had better do it in the simplest way. The simplest way, as far as I know, is by getting rid of the coloured lights altogether, and enacting that every ship shall carry two white lights, say 10 feet apart, at an angle of 45°, and let them show however they like to show. You then get all the movements perfectly clear with only two lights, those two being white lights. If I thought it important, I would rather advocate that.

2731. Am I to understand that your suggestion is do away with coloured lights?—Yes.

2732. Then it would mean that you would have another light above this 10 feet?—No. May I show it to you here? You know if it is necessary—I believe it is not—to show all these manœuvres you suggest, then I think the simplest way is to put two white lights 10 feet apart on a stay set at an angle of 45° to the horizontal; those two lights will show you all you are asking for and will give you every movement. Their angle being a fixed one, and their distance a fixed one, you will get the course and movement by the apparent angle; and the distance by the apparent distance. But I do not lay any stress upon that, because, as a fact, if we could get seamen to leave off turning away from an apparent danger, we should shop collision.

2733. Then on a steamer you would have a light at the masthead, and another one arranged on the forestay, but would it be possible for the same to be shown on a sailing ship and not be obstructed by the canvas?—Yes, I think so, because they need only be very light lanterns.

2734. If you were abeam of that sailing ship, how could you see the bow light?—The sails would hide it when you got abaft, no doubt.

2735. Then do you think they would not be so easily seen as the lights which are now in a sailing ship?—I think they would be generally as visible as the coloured lights are in sailing ships.

2736. Would you think that preferable to having a second red light at an angle of 45°, one above the other, 8 or 10 feet?—You see my aim has been from the beginning always to simplify matters. I have always been dead against any increase in the lights, or any fresh regulations with regard to the lights. I had hoped we should keep clear of them.

2737. Referring to the matter of the screening; I think your memory goes back to the time when the side light was merely shipped alongside the screen, and there was no chock on it?—Yes.

2738. Then by that arrangement would you say—no doubt you would—that the angle of the light crossing the bow was very much greater than it was afterwards when the chock was fitted?—Clearly.

2739. Do you remember whether under those old conditions there was any very serious complaint made as to the light crossing the bows at such a coarse angle?—No, no one then perceived the danger; I was the first to draw attention to it.

2740. Then some two years ago the time came when the Board of Trade went into the matter somewhat, and first fixed the chock, the object of that being to reduce the angle across the bows; you are aware that there was a great diversity amongst the different ports in the country and amongst the different Board of Trade surveyors, as to the precise angle at which these chocks were arranged?—Yes, but the chock began to be fixed in 1868.

2741. And varieties of lamps so fitted to the same screen?—Yes.

2742. Do you think there is any special reason for the shipowners generally to have complained with such unison of the recent action on the part of the Board of Trade; do you think that there has really been an increase in the angle on an average, or a reduction, or do you think it is only what the Board of Trade discovered to be the custom in different parts of the country?—From my point of view I do not think the shipowners need complain in the least. Of course, I should think every shipowner who had the lights screened on the old plan would object to the expense of screening on the new plan, but that is as far as his objection would go. I do not think the angle of 4° is any particular increase, I doubt if it is any at all, on the old practice; but, on the other hand, when Sir Digby Murray was good enough to give me the evidence upon which he was acting to revise the method of screening lights, I said, "Well, if that evidence had come before me I should "have said let well alone. After all, the great mass of "lights you have examined are very fairly screened and "it would be comparatively easy to draw a surveyor's "attention to one case where it turned out that lights "were not properly screened." But I cannot lay any very great stress upon any part of this question now, because, as I stated in my answers to the Chairman, the fact is that, however it has come about, the dangers which did exist from bad screening have to a great extent passed away, even before the Board of Trade took this latter action.

2743. In other words, you would have thought it more politic had the Board of Trade not formed this wholesale determination to reduce the limit, but had gradually done it in the most extreme cases, and you think by that that shipowners and nautical men would not have seen that there was any very great force in getting their attention drawn to it?—Yes, I think that would have been so.

2744. And that gradually the change might have come about without any public excitement or public protest?—Yes, but I never should have gone beyond the instructions to the surveyor, never; because, after all, the thing was working very fairly well.

2745. You referred to the owners objecting to the expense of altering the screening, but I presume you recognise that the mere cutting down and doing a little bit to the chock at the end of the screen is only a question of a few shillings; I presume you do not wish to make the shipowners appear so parsimonious that they would hesitate to do anything for the safety of the ships?—No, if they were convinced that it was a matter of great concern, it might be so; but I think as a shipowner I should have been worried, when my lights were already properly screened, if I had to comply with a fresh unimportant rule, and had to get carpenters in to make alterations, and I should have grumbled.

2746. You think the ship's carpenters could not have done that?—I do not know, but I should have grumbled.

2747. (*Mr. Scrutton.*) Do you think it at all worth while to bring the green and red lights into such a position that they are seen at even distances? At present, you know, it is quite admitted that they are seen at uneven distances. Do you think it worth while giving attention to that matter?—My original impression was that the Board of Trade might very properly have produced pattern lights; not perhaps to have enforced them, but to have erected, as it were, a standard, getting the best information they could, employing the most scientific men in preparing lights, and that would include what you say. That is to say, the green light would have a more powerful flame than a red light, so as to bring it up, if possible, to the power of the red light.

2748. That could be secured by making the green a duplex light, and the red a single light?—Something like that.

2749. There is one other question arising out of Sir Edward Harland's questions; you do not appear to

*Vice-Admiral P. H. Colomb.*

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attach much importance to the question of whether the light is screened at 4° or 2°?—I think it is worse when screened at 4°, but you must recollect the Board of Trade's screening here is from the outer edge. I do not know whether you could screen the outer edge to 2°. Perhaps not, with a very wide wick.

2750. The figures before us, which you may accept as correct, are, that in a vessel at 2 miles, with a screening of 4°, and a beam, I think, of 50 feet, the field—which we call the part after the rays have crossed—the half breadth of that field, would then be 800 feet at 4°. If it was 2° it would be half. Do you not attach importance to the question as to whether at 2 miles both lights can be seen within 800 feet or 400 feet of a central line?—I should rather not see both of them at all, but of course the narrower the field the better it would please me.

2751. (*Captain Thomson.*) I think you said that if the limiting angle of right ahead was narrowed to any angle it was not necessary to make the angle of screening correspond with that?—Quite so.

2752. Assuming, merely for the sake of putting my view of it, that it would not do to narrow the limiting angle of right ahead less than half a point?—Yes.

2753. And say that we screen a side-light to very fine screening, of 1° or 2°?—Yes.

2754. I should like to call your attention to this. *Here* is a ship which sees exactly ahead of her a green light, owing to fine screening?—Yes.

2755. Owing to the limiting angle of right ahead, this other vessel sees the first ship's side-lights at an angle within the limiting angle of half a point?—Yes.

2756. According to the rule of the road this other vessel is bound to port?—No.

2757. Why not?—Because she has got him on the starboard bow; not end-on or nearly so.

2758. But assume that is an angle of 5°?—I could not follow you into niceties like that. They do not exist in practice.

2759. We will make it a point for the sake of illustration?—Perhaps I do not quite gather what you mean.

2760. The lights are screened on both ships very fine in a line parallel with the keel; but the limiting angle of nearly right ahead is 5°; I am laying down the law now that she has to port. There is no doubt about that. But *that* ship, owing to the fine screening, opens only one light and stands on, according to the rule of the road?—Yes.

2761. You see that is a contradiction of the rule of the road?—Yes, absolutely; but it would be the rule of the road that was wrong.

*Capt. S. R. Chandler.*

Captain Samuel Rock Chandler called and examined.

2762. (*Chairman.*) I think you have been at sea for 25 years, have you not?—Yes, 25 years.

2763. Have you been in cargo steamers; if so, for what period?—I have served since 1879.

2764. What office have you held on cargo steamers?—I was second mate, mate, and afterwards master.

2765. Speaking generally, what has been the sort of sized steamers that you have been connected with?—The smallest, I think, that ever I was in was 790, and the largest 2,200 registered tonnage.

2766. Have they been engaged in trade pretty well all over the world?—All over the world except the West Coast of America.

2767. Before 1879, I think, your experience had been with sailing vessels?—Yes.

2768. You have been a master, I think, since 1884?—Yes.

2769. I should like to ask your view upon this subject of the screening of the lights. First of all, with regard to the Board of Trade rule of 4°; I should like to know what your opinion is upon that subject. Do you think that that rule enjoining screening at an angle of 4° from the outer edge of the wick is a desirable rule or not?—No, I think it is too much. It is not desirable.

2770. Have you formed an opinion what angle of screening would be desirable?—I should say that if the light was screened about the middle of the wick it would throw the light at a sufficient angle across the bow, and at the same time not be dangerous.

2771. Before the Board of Trade rule requiring the 4° came into force, what, as far as your experience goes, do you think was, in practice, the sort of angle at which vessels' lights were screened?—I was in a vessel—I should say I never tested it exactly—but, speaking roughly, both her lights were visible at a point at the very least on the opposite bow when she came away from the building yard.

2772. Screened a point across?—Screened a point across. The screens had no chocks in them; no cleats or chocks—whatever you like to call them—and they remained like that for about six months, and I altered them.

2773. Of course that was a strong case?—But from what I know about merchant steamers, I should say they were screened all ways, anyhow. There does not seem to have been any fixed rule about them, or any angle at which they were screened.

2774. Take your own vessels; what do you think their lights were screened at generally—4°, or more or less?—No; they were screened at more I should say Oh, yes, more than that.

2775. I rather gather from what you say that you did not pay any very special attention to the exact angle at which your lights were screened?—No, until 1892.

2776. And I suppose that applies pretty well, as far as your experience goes, to other masters of similar vessels? It was pretty general, I think; I suppose they did not pay particular attention to the angle of screening?—I do not believe they did; so far as I know they did not.

2777. So that when you saw another vessel at sea you did not form, in your own mind, any very special idea as to how her lights would be screened?—No.

2778. But now, when you come to think over it, you think 4° is too much?—4°, I should say, would be too much; that is 4° to each light, of course, you mean.

2779. 4° from the outer edge of the wick?—Of each side; yes. Yes, I should say that would be too much.

2780. Of course, if you screen from the middle of the wick that would give, taking it from the outer edge of an ordinary 1-inch wick, something like 1° or 2°?—Well, perhaps 2°, between 1° and 2° I should say; and the point of contact of the rays of lights on different sides, when the light was screened in that manner, I should say would be quite near enough to a vessel for all practical purposes, and, at the same time, not misleading.

2781. Why, if you have thought the matter over at all, do you think that a finer angle of screening than 4° is better than an angle of 4°?—You ask why I think an angle of 1° is better than an angle of 4°?

2782. Yes?—Well, because the light on one bow is not visible on the other bow so much.

2783. You mean that they do not cross?—Yes, they do not cross. You see, the further you get away from a vessel with crossing lights the greater the extent of the arc becomes through which the light is visible on the opposite bow, and it is in cases where a vessel is at some distance off where the excessive crossing of the lights is apt to lead to mischief.

2784. You understand, of course, that if the lights show right ahead some of the light must, to some extent, cross?—There always will be a certain amount of crossing.

2785. Then is it your view that the crossing should be as little as possible?—As little as possible.

2786. Now, as to the dark lane. You know it is suggested that if the lights are screened strictly so as to show only right ahead of the lamp there would be what is called the dark lane. What is your view about that in practice—is it a thing that is likely to exist?—No, I do not think so. You could get a dark lane if you had a screen 40 or 50 or more feet in length, but with the ordinary 3 foot screen I do not see

how there could be any dark lane. I may tell you that on one occasion after 1892, the first experiment which ever I made about lights was in the case of a steamer in which I was then, called the "Fastnet." She had her side-lights under the bridge on each side, and these lights were screened—they had the wooden chocks at the fore end of the screen, which were the same thickness as the framework of the lamp. I do not know whether I am making myself clear to you.

2787. Yes?—The copper framework of the lamp—the inboard framework of the lamp—was the same thickness as the chocks on the forward end of the screen. Standing on the stem with both those lights lit you could see both clearly on the stem, which was, I suppose, about 120 or 130 feet away from the lights.

2788. So that in that case there would be absolutely no dark lane at all?—No; but then they were not screened right ahead, because the angle was made by the screen on the other bow; the angle of the crossing was made by the wick and the chock; a line from the wick passing the outer edge of the chock and continued over the bow would give the line of crossing on the opposite bow; that was considerable.

2789. I think you attach importance, do you not, to a compliance with the rule that the lights are to show to two points abaft the beam?—Yes, I do; I think there has been little or no attention paid to it.

2790. Practically you think it is of importance that the lights should show 2 points abaft the beam tolerably accurately?—Yes, I think so.

2791. Is that with a view to understanding your position when you are an overtaking vessel?—That would be one reason. It is also an approximate guide to the direction in which ships are steering.

2792. In steering your ship, take for example the sort of vessels that you have been connected with, what are the limits of deviation of the yaw of the vessel as she steers, do you think?—Well, it will alter very much under different circumstances.

2793. What difference would you allow with good steering?—In bad weather, with a steering engine even, a laden cargo steamer can hardly be kept within less than a point each side of her course in a heavy gale of wind, running before a heavy gale of wind. If you keep her within a point on each side of her course you do very well. I never object to a helmsman with that; of course, in fine weather and smooth water, and with a steering engine, you can keep them within a quarter of a point or less; a good helmsman would keep her within a degree or so.

2794. And even with the lights screened finely a vessel would be apt to show the lights one side or the other?—Yes, with yawing you are bound to show that. I have noticed it with some of the fastest fine-bottomed vessels like the P. and O. and the Messageries Maritimes of France. You always see them moving a little one way or the other.

2795. When you see that at sea, when a vessel is perhaps following you or even approaching you and showing the light first one side and then the other, do you recognise that as the effect of yawing?—I do not know what else it could be. It could not be anything else that I am aware of.

2796. Would it be tolerably quick. Would you see the alteration of the green and red lights quickly?—No, not with an oil lamp. You do not see one light and then instantly lose sight of it and at the same time get hold of the other light. You would see in very fine weather one light gradually get a little dimmer, and then, perhaps, disappear altogether for a short interval, and then another light come into view. Of course there are times when you see both lights. With the electric light it is cut off much quicker. You lose sight of the electric light almost instantly.

2797. So that, supposing you saw a vessel coming on with her lights screened fine, and then saw first one and then the other through the vessel's yawing, that would not be a thing that would puzzle you?—No, not at all.

2798. Do cargo steamers often have much of a list either to port or to starboard?—They do sometimes.

2799. I suppose unless the lights are hung so as to swing the amount of light which is shown by the lamp on the side on which she is listing is affected by it. Have you noticed that?—No, I do not see how it would.

2800. The flame of an oil lamp remaining always upright, if the vessel is listing to any extent part of that light, I suppose, may be obstructed, may it not?—Yes. You would want a tremendous list to make much difference.

2801. You do not find it is so practically?—Practically I would say it would amount to nothing. In a vessel with a list of 12°, which is a very heavy list, it would not make very much difference to the flame, especially if you take into consideration that the draught which causes the thing to burn, especially if it has got a chimney, is always going up in the direction of the chimney, and the perpendicular of the chimney changes with the plane that it rests upon. Even without the chimney the draught has a tendency to run up through the top of the lamp.

2802. Is the electric light coming into use in cargo steamers?—To a good extent it is, but nothing like what it is in the case of the large steamers, the liners. They all have it now.

2803. Do you think the electric light will before long, come into use in cargo steamers of the ordinary type, big steamers I mean?—Yes, I think so in the large ones, the heavier ones I think it will, because it affords a considerable amount of convenience for working at night in winter in port. That is the principal reason why they will use it, because they can work in the short days and the long nights in Europe in the winter, where it is impossible to work always between sunset and sunrise if you have not got the electric light.

2804. (*Rear-Admiral Andoe.*) Cargo vessels yaw a good deal at sea, do they not?—Yes.

2805. Say a point either way in bad weather; suppose you see a vessel of that description approaching you?—Yes.

2806. And you see practically her two lights, it may be a point on either bow, but in consequence of her yawing she may show you first one light and then the other, but practically they are blended, and you may say there are two lights ahead of the ship?—Yes, I quite understand what you mean.

2807. Seeing the two lights ahead of you or nearly ahead, what would you do in your ship—what is the rule of the road?—Pass her on the port side.

2808. Port your helm?—Yes.

2809. Considering that vessels of that description yaw a point either way why do you put so much stress upon the fine screening of the side-lights; what difference could it make to a vessel of this description?—The less liable we are to be misled by the yawing; the finer the lights are screened the less liable you are to be misled by the fact that the vessel is yawing about.

2810. Do you consider that the side lights should show as brightly ahead as, we will say, 4 points on the bow?—Yes, I do not see why they should not.

2811. You would not like to arrange the screen so that it should cut off the power of your bow light at all from ahead, would you?—No.

2812. You would not like to overlap the light with your chock so as to reduce the power of the light right ahead, would you?—You would not be overlapping the light by screening it parallel with the centre of the wick.

2813. You would wish to have your lights show, at any rate, right ahead, the full light?—Yes.

2814. Have you ever seen the dark lane at sea in ships?—No, I have never seen it.

2815. Does that not point to the fact, probably, that the lights have always crossed at an angle?—Yes, that they do cross, that they always have crossed.

2816. Previous to this new regulation of 4° and this question having arisen, did you fully realise the fact that the lights did cross the bows of the ship?—Oh, yes, I was quite well aware of that.

2817. Supposing that very fine screening were ordered, we will say to a line parallel with the keel as you suggested just now, and suppose a mail steamer coming down only 2° on your starboard bow showing her green light nearly ahead; you see nothing but the green light in consequence of fine screening with the electric light, because you have said just now the electric light cuts off very quickly, and you show to her both lights in consequence of yawing? What would you do to follow the rule of the road or to keep clear of that vessel?—She is showing me her green light only.

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2818. Only her green light, and nearly ahead, but you can tell she is coming down upon you?—And we are showing her both.

2819. Yes, because you are yawing?—Of course, I am not supposed to know what I am showing; I only see her green light; it all depends where her green light is, which bow it is on.

2820. Take it within 2° or 3° of the bow ahead of the ship?—On either bow?

2821. Yes?—If it was on the port bow I should go on.

2822. (*Chairman.*) If it was on the starboard?—If it was on the starboard bow, and I thought we were going to pass her too fine, I would probably keep away, and get on her starboard side a little more.

2823. (*Rear-Admiral Andoe.*) A little starboard helm?—Yes, a little starboard helm.

2824. What should you do supposing you saw both lights coming towards you?—Port the helm.

2825. Then you starboard, and the other ship ports her helm?—Yes, but I do not see how that could ever occur. It may be the case in theory, but it never is so in practice. If the steamer that was showing me her green light was coming down nearly ahead of us, and it was simply owing to her fine screening that I only saw at one time, say when I first saw her, her green light, she is sure to show me the other before very long; then I would know she is coming down in the opposite direction to me, and nearly end on.

2826. Do you think that that fine screening would entail more discretion being left to the officer in charge of the deck, the mate, for instance, instead of his following the old rule of thumb to port the helm?—It would have that effect, that if the light was more finely screened they would not attempt to go as close to a vessel as they do now, that is, being guided by the light alone.

2827. But in the instance I pointed out just now of the mail steamer coming down, steering a very steady course, and finely screened, you only see her green light, but she sees both your lights in consequence of your yawing; she is bound to keep clear of you by the rule of the road, but you do not see her red light until she begins to port, and you go off under the starboard helm to give her a little room?—You are assuming a case which I do not think exists.

2828. You do not think it is possible?—No, I can quite understand that contingency if the lights only had screens on them so long that the actual line of crossing—because there must be a line of crossing somewhere—was beyond the illuminating powerof the lamp. You could have that contingency then; but I do not see how you could have it with 3-feet screns.

2829. In the case of mail steamers lighted with electricity and coming up astern, do you often see one light when they are coming up astern within a few degrees of your course, or do you see both lights?—That simply depends upon how she is coming up. If she is coming up right astern we see both lights, and if they yaw a little we see one or the other.

2830. Take half a point on the port quarter?—In fine weather they would probably show their green light steadily.

2831. The Board of Trade officials say that if the light was screened more finely than 4° these vessels on passing, instead of porting their helms and going clear of one another on the port helm, would be too close, if they followed the doggerel rhyme which says "Green to green, red to red, perfect safety, go "ahead"; and that rhyme I suppose is the rule of thumb which a great many of the mates on your class of vessels would follow, would they not?—You must bear in mind that there are times when you see a green light on your starboard bow, and common prudence and instinct tell you that if the two vessels continue on the same courses they must come into collision, or so near to it that the risk is not worth running. The consequence is that one or both make an effort to get out of the way of the other. You can have vessels coming with their green lights, showing to each other and they will hit one another's lighthouses.

2832. But if you had this very fine screening you could not allow the rule of the road or the rhyme to be considered as "perfect safety"?—I do not know; the rule would be the same as it always has been. That would be just as true with the lights not screened so much across the bows.

2833. But now that the screens are fixed at 4°, if you pass in that manner, green to green, and red to red, and follow your courses, you each pass a considerable distance from the other?—There is no probability of your seeing the crossing light when you are green to green or red to red. If two vessels, each on the other's starboard bow ever so little, are showing each to the other their green lights, the amount of crossing that the lights have has nothing to do with it. If they have the other the least bit on the bow they must be beyond the parallel line of the lights and crossing does not come in then at all. The risk in crossing is not seeing the green light under those conditions but seeing the red one too.

2834. If you saw her green to green, you would, I presume, naturally, as a seaman, starboard the helm and give a wide berth, but the danger, I take it, would have been if one saw both lights and the other only saw one?—That I believe, as I said before, is a contingency that is never likely to arise. I do not see how it can in practice.

2835. (*Captain Thomson.*) From the point of view of the smaller class of vessel, when you have small vessels whose lights you would probably not see more than a mile in ordinary weather, do you consider it advisable that large and fast steamers should carry very powerful lights?—No, I believe it would be an advantage if there were some standard amount of light given which vessels should use and not go below or above.

2836. You see no practical advantage in seeing a steamer's side-lights distant, say, five or six miles in ordinary weather?—No, I do not see that there is any advantage in it; under certain circumstances it might be misleading. It is so with the electric light.

2837. You think the glare of these powerful electric lights is often the cause of making the other inferior lights less distinct?—Yes.

2838. As regards yawing, take a fine summer night in the channel and smooth water, would you see any perceptible yawing in the ships that you meet?—Some of them, yes. I have been in cargo steamers that two men could not steer by hand within a point and a half on each side of their courses in the smoothest water. Those are, of course, exceptions.

2839. They are steering their best; but in smooth water they oscillate, so to speak, a certain angle, say half a point on either side of their courses?—Yes.

2840. Can you give me any idea as to what length of time it would take to complete one of these oscillations, that is to pass from one side of the course to the other and back again?—The "Fastnet" was a very bad steering vessel, and in smooth water, say a calm night, with no other influence except her propeller and rudder, she would make an oscillation of half a point on one side or the other, when steered by an engine, about every three or four minutes.

2841. Supposing it was a very long powerful mail steamer, she would probably not oscillate so much as that. Do you think she would take as long a time to oscillate, supposing she was going 18 knots?—No, I believe she would oscillate more rapidly. My experience of fast steamers is almost nothing; and I am only saying this from seeing them coming up astern.

2842. You think that an oscillation of about half a point each side would take four minutes?—About four minutes; every four minutes.

2843. Do you attach any importance by day or by night to the rule of the road which compels meeting steamers to alter their course to starboard? By meeting steamers I mean end on?—Yes, I should think so.

2844. In other words, if the rule was blotted out, should you think it a good or a bad thing?—I should think it was a very bad thing, unless they made a rule to pass to starboard. They could alter it if they liked, but they must have one side to pass on.

2845. Then you do attach importance to it. You think there should be a definite rule?—There should be a definite rule on which side each should pass the other.

2846. (*Captain Castle.*) I suppose the oscillation depends to a great extent upon the helmsman: yes; but I was speaking of a case just now with a good attentive helmsman.

2847. There is a good deal of difference in the helmsmen?—Yes.

2848. One man has his head in the ship's compass, and the other one watches the ship's head?—Yes. I believe that in all steamers there must be a certain amount of oscillation. It is practically impossible to get her right on her course, no matter what it is.

2849. I suppose, in your opinion it is necessary that there should be an uniform screening in all ships?—Yes; that is the great disadvantage of the rule in vogue at present.

2850. (*Mr. Bolam.*) What ports are the ships that you have belonged to registered at?—London.

2851. All London?—I was in one that was registered at Glasgow.

2852. None in the Tyne?—No.

2853. Nor in the Cardiff district?—Nor in Cardiff.

2854. So far as your experience goes, the Board of Trade by this 4° have decreased the angle of screening, and not increased it?—In my own experience they have, I do not say collectively, but in several instances. I am not in a position to say what was the mean angle at which vessel's lights were screened, but I know plenty of cases where the screening has been in excess of 4° considerably. I believe that 4°, on the average, would probably be about what they all are now.

*Capt. S. R. Chandler.*

22 May 1895.

2855. But to go back to the 1892 rule, when the 4° instruction to surveyors came in. In steamers you have been in command of previous to that time your lights were screened to more than 4°, according to your own experience?—Yes; not in all of them, most of them.

2856. Then your complaint, if you have one, is that they have not decreased it enough?—Not decreased it enough.

2857. You are quite sure, as far as the navigation in the class of vessels you were concerned in goes, that the angle ought to be less than 4°?—I am.

2858. As small as possible?—As small as possible.

2859. (*Captain Castle.*) But you take your screening from the centre of the wick, I think?—From the centre of the wick.

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## Thursday, 23rd May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

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|---|---|
| Rear-Admiral ANDOE. | Captain HALLETT. |
| Captain WILSON BARKER. | Sir EDWARD HARLAND. |
| Mr. BOLAM. | Mr. SCRUTTON. |
| Captain CASTLE. | Captain THOMSON. |

Mr. C. HIPWOOD, *Secretary.*

Captain DUGALD MCDONALD, called and examined.

*Capt. D. McDonald.*

23 May 1895.

2860. (*Chairman.*) I think you are a Clyde River pilot, are you not, in the compulsory pilotage district under the Clyde Pilot Board?—Yes.

2861. I think you have held that position since January, 1891?—Yes.

2862. You are a member, I think, of the Clyde Pilot Board under an Order in Council of 1890, which provides that the river pilots shall have three representatives on the board?—Yes.

2863. You are one of those representatives?—Yes.

2864. I think you hold an extra master's certificate of competency and are a lieutenant in the Royal Naval Reserve. And before 1891 you were in command of large sailing ships?—Yes.

2865. How long did you hold command of these ships?—About eight years.

2866. Where did they trade?—To the south, round both Capes, the Cape of Good Hope and Cape Horn, India, and California.

2867. And have you served on steamships also?—Yes.

2868. In what capacity?—As chief and junior officer. I was appointed to a command, but did not sail in that capacity.

2869. Before joining the pilot service, how long were you at sea altogether?—23 years.

2870. I think you appear, do you not, to represent the Clyde river pilots?—Yes.

2871. What is their number?—About 40.

2872. Between what points do you pilot ships?—Between Greenock and Glasgow, and on special occasions as far as Cumbrae Head.

2873. Can you give me the numbers of ships that you have piloted, by night and by day, between Greenock and Glasgow?—About 560 ships.

2874. That would include, I presume, both large and small?—Both large and small, and at all periods of the 24 hours, night and day.

2875. I think, upon this subject, your views represent those of your brother pilots, do they not?—Precisely.

2876. With regard to the channel over which your piloting operations take place, what is the width of the channel for deep draught ships in the narrowest part of the river?—The width of the channel available to work deep draught ships would be about 200 feet, and the width of channel available to work light draught vessels would be about 400 feet in the narrowest part of the river.

2877. In regard to the screening of side lights across the bow, what is your opinion as to what the size of the angle should be?—My opinion is that the angle should be as small as it is possible to have it.

2878. Have you had practical experience which has led you to form that opinion?—Yes, I have, in going up the river, meeting small vessels on several occasions; and on one occasion, as lately as the 10th instant, I met a steamer coming the other way with a light showing so much across the bow that had I not seen the hull of the ship I would have kept out of her way so far that I would have put my ship ashore; but, owing to being able to see all the hull of the ship, I could see that she was going on a parallel course to me notwithstanding that her side light appeared to show that she was crossing my track.

2879. The lights of the large steamers belonging to Glasgow are now, are they not, screened to the 4° angle since the Order in Council was issued?—Yes, I believe they are, and although we get the ships up safely, notwithstanding that the lights are screened to this 4° angle it is mainly owing to the fact that we can see the hull of the ship—the outline of the ship—owing to lights distributed along the decks, perhaps from the cabins, showing through the ports; and also I may mention the tug boats; they generally have one astern, which shows us the line upon which they are going independent of the side lights; and independent of that each ship keeps its own side of the channel.

2880. I suppose that is the starboard side?—That is the starboard side.

*Capt. D. McDonald.*

23 May 1895.

2881. Can you give me what your belief is as to the opinion of owners of large liners such as the Allan, the Anchor, or the City. Do they, as far as you know, agree with your view upon this point, or are they opposed to it?—They agree entirely with my view upon this point, the Allan, Anchor, and the City I know, but the others I am not sure about, though I think it is highly probable that they are of the same opinion as those companies I have mentioned just now.

2882. And is it your opinion that the screening to 4° would be a source of danger?—It is.

2883. And, speaking of the Clyde river navigation especially, with which you are connected, your judgment I understand is that the smaller the angle to which the lights show across the bow the greater safety there is?—Surely so.

2884. That is the opinion of those with whom you have been brought into contact on this subject?—Yes, precisely.

2885. (*Rear-Admiral Andoe.*) That refers to navigation in narrow waters particularly, does it not?—Yes.

2886. You have not had actual experience of navigating these vessels in open water, have you, as a pilot?—Well, no, not as a pilot.

2887. Then in piloting these vessels up the Clyde, pilots always keep to the starboard hand, do they not?—Quite so.

2888. And you presume that a pilot coming in the opposite direction is keeping on the starboard hand also?—That is so.

2889. And if you saw two lights nearly ahead of you, would you alter your course, we will say to go across the bows of that vessel to port, or to put your ship into danger in any way, or would you expect the pilot to keep clear of you. Would you keep your side or not?—I would keep my own side.

2890. Lights or no lights; that is to say, whether the lights in the ordinary sense in following out strictly the rule of the road would entail a change of course which would send you ashore or across the bows of the other vessel?—The rule of the road would not apply in the River Clyde. The harbour authorities regulate that. We have to keep to the starboard side of the river, and it is only under exceptional circumstances that we would pass on opposite sides. But although we keep our own side of the river, we feel very uneasy when we see the starboard light when we ought not to see it. All ships coming down the Clyde, or going up the Clyde, do not have pilots on board, because a great many smaller vessels have a license, and though they may know the river quite as well as the permanent pilots do, still we do not depend so much upon their action as we do upon the action of men of our own staff.

2891. Do all the large steamers going up and down the Clyde have local pilots?—They all have local pilots.

2892. Only the smaller class do not?—Only the small class do not—coasters.

2893. You are aware that before the Regulations came out the side lights always did cross the bow at a certain angle?—Well, I have heard that said; I am not quite sure of the fact that they did, but I have heard it; it is just information I have got.

2894. Did you ever observe the dark lane that has been talked about?—I never did.

2895. Is not that a proof that the rays of the light must cross?—Yes, I suppose it would prove that; but I would fancy the rays might cross and meet, although the lights were screened parallel to the keel.

2896. Have you got reason to suppose the angle of screening has been increased in consequence of the 4° order in most ships?—In some cases, I believe, there has been an increase, but I cannot say positively; I have been making some inquiries upon the point.

2897. Of your own observation, have you noticed any great difference?—No, I have not noticed any difference, and I think it would hardly be easy to notice that just with the eye.

2898. (*Captain Thomson.*) I wish to ask you a practical question, and I should like you to consider yourself in the position, as far as possible, that I am going to put you in. Supposing you are in a short handy steamer not renowned for speed, and your true course is N. with a strong head wind—will you kindly take the compass card before you—and steering N. you suddenly see the two side lights, either of a sailing vessel or a steamer, bright and wide apart as if that ship was pretty close to you, and the red light, which looks the brighter of the two, bears N. 5° E., what would you do then?—I am steering N. and the red light bears N. 5° E.?

2899. (*Mr. Bolam.*) Can he see the green?

(*Captain Thomson.*) Both lights are seen?—Is there a mast-head light?

2900. I said a steamer or a sailing ship?—And I am on a steamer, and I see his green and also I see his red light?

2901. Yes, you see the red, rather the larger and brighter of the two. If it is a steamer you see his mast-head light bisecting those two lights?—Yes, then he is half a point on my starboard bow?

2902. Yes, 5°?—I see his three lights, and I should port.

2903. Amongst the steamers that you have piloted I take it that for every one which is a twin screw you might pilot 100 single screws, roughly speaking?—The twin screws are not so numerous as the single screws.

2904. The majority of the steamers that you pilot which are single screws have a right-handed propeller, have they not?—The majority have, but a great many come into the Clyde which are left-handed.

2905. You would expect the captain, when you go on board, to inform you if it is a left-handed one, would you not?—Well, I should suppose he would; but I have learnt that lesson, and that is the first question I ask when I step on board a vessel.

2906. With most steamers which have right-handed propellers, when you turn astern, the action of the propeller is to assist your port helm?—Certainly.

2907. And the action of the propeller would oppose the action of the starboard helm?—No, on the contrary; in going astern, if I wanted her head to turn to starboard, I would put the helm to starboard at once, although the ship had headway on her.

2908. You do not quite understand my point. I am not speaking of a ship going astern, but going ahead; her engines are suddenly reversed?—Yes.

2909. If you had starboarded your helm before you reversed your engines, am I not right in supposing that reversing your engines with a right-hand propeller would oppose the action of the starboard helm?—Undoubtedly it would.

2910. In the case I mentioned, if that ship had been very close to you, when you said you would port, is there anything else you might have done?—Yes, if she was very close, so that I could not clear her with porting; but I am not speaking of such a case as that. When I can see her three lights clear, unless there is fog, or something of that sort, I have very little to port; only 5° before I am clear. But if she is so close that I could not clear her without going astern, I would certainly go astern without any hesitation.

2911. And in reversing your engines, you would know that would assist you in turning to starboard?—Yes.

2912. In a case of that kind, do you not think it would give you confidence if you were quite certain that the vessel you are trying to clear—that you reasonably hope you will clear by acting promptly in this way—was not going to starboard? Would that not give you great confidence?—Undoubtedly.

2913. We have considered that question in the case put to you without reference to screening. Now let us consider the question, bringing in screening. The same conditions hold exactly. But now you are in a steamer whose lights cannot be seen at a greater crossing angle than 2°. That vessel you have ported to will only see your green light. That is so, is it not?—Yes.

2914. But if your lights were screened so as to be visible across 5°, she would see both your lights, would she not?—She would, I suppose; yes.

2915. Would she not?—Yes, I suppose she would.

2915*a*. And in that case what would she be bound to do, if she saw both lights?—She would be bound to take the same action as I should; namely, port.

2916. Therefore, in one case, you would be quite certain she would port, and help you to clear, and in

the other case there might be a doubt in your mind whether she would port, starboard, or stand on. Is not that so?—I do not think there would be much doubt in my mind, speaking from the practical point of view, because we do not try to pass each other within 2° or 3° at sea.

2917. But I have given you purposely a case of emergency where you would not have time to consider the case of screening, but you would simply act as a practical seaman would act?—Yes.

2918. (*Captain Wilson Barker.*) You have had experience, of course, of working a ship at sea, and also in narrow waters?—Yes.

2919. Do you find that you see much more of the light in narrow waters than at sea?—Do you mean being screened across the bow?

2920. Do you see them much more spread out in narrow waters than at sea?—Yes, you do. But I think that is merely passing them so much closer than at sea, as a rule.

2921. Therefore you think fine screening might be very good in narrow waters; but do you think it would be as good out at sea?—Well, I have given that the best consideration that I can, and I do not at all see so much objection to screening a little across the bow at sea where there is plenty of room, as I do in narrow waters, because, of course, from the fact that they are screened to any extent across the bows—I do not care whether it is much or little—ships will pass a larger berth clear of one another than if they are finer screened.

2922. Then, I suppose, you think it is very advisable that, at sea, they should give one another a much wider berth than in narrow waters where the water is smooth?—Yes, but I do not see any occasion for vessels to come very close to each other at sea, where there is plenty of room, and, as a matter of practice, that is not done.

2923. But do you not think if they had a fine angle of screening at sea there might be a tendency to cut one another rather fine in passing?—I do not think so. I think the feeling is with all men I have come in contact with that they always wanted to give a good wide berth—they did not want to go shaving as close as they could, and it was only when compelled to that they would pass close to each other. Therefore I think there would be no occasion for wide screening at sea, and I suppose there would be an insuperable difficulty in having two kinds of screening, one wide at sea, and the other narrow in narrow channels.

2924. Of course, you do see objections to wide screening in narrow channels?—Well, I do not see so much objection at sea as in narrow channels.

2925. (*Captain Castle.*) Referring to the helm, do you not think a ship answers her port helm more readily going ahead with a right-handed screw?—No.

2926. I think it has been proved by experiment that it is so—that the case of the propeller acts upon the rudder?—No. I speak from my experience; I have gone into the matter very carefully, and I have had clear object lessons on the matter. I have had it clearly demonstrated that a ship will answer the starboard helm much quicker than the port.

2927. With a right-handed screw?—Yes, going ahead, in fact, with all the large steamers; I may say that the great majority of large steamers going up the Clyde with a right-handed propeller are very lazy on the port helm, and we have tug boats to assist them almost always on the port quarter going round the bends. There is no doubt about that.

2928. Speaking about the tugs, you say you are generally guided by the tug astern of the ship, seeing the direction in which the ship is coming?—Yes.

2929. How are you guided?—You can see the lights of the tug a long way off.

2930. Astern of a big ship?—Yes.

2931. These licensed pilots pass examinations, do they not, for exempt ships?—Yes.

2932. The same as yourselves almost?—Pretty nearly.

2933. (*Mr. Bolam.*) What is the greatest draught of water drawn by vessels coming up to Glasgow?—A little over 26 feet—just a few inches over.

2934. And the depth of water has been practically got by dredging?—Yes.

2935. The Clyde was not so many years ago little better than a muddy ditch?—That is so.

2936. The consequence is, that the navigable channel is extremely narrow, narrower than the stream itself?—Yes.

2937. You said the breadth of channel is 200 feet for large draught ships?—Yes, for working on.

2938. If two ships pass in that way each with a beam of 60 feet, and they go to the extreme verge of the navigable channel, how much does that give you? If you subtract 120 from 200 that leaves 80, or nearly 80 feet clear space?—Yes.

2939. The navigation is an extremely delicate matter?—It is very delicate indeed.

2940. The matter of a little more helm or a little less helm is of great importance?—Great importance.

2941. Supposing you had one of these vessels allowing a little margin through the amount of helm, what would probably happen?—It would probably happen that if she was well over the limit of 200 feet she would smell the ground and the result would be that she would fly off to mid channel from the banks, and the helm would have no effect upon her; and supposing there was anything passing then, even though you immediately reversed your engines, you would probably run into the other vessel, and strike her. So that you would have to meet each other practically end on—practically two large ships drawing all the water there is must meet as dead end on as possible, and not give way to each other till, say, they are within 200 yards or thereabouts.

2942. Then a ship that is smelling the ground in that way, and then flying round with her stem, it is quite possible she might hit any ship in passing?—Yes, it is very likely.

2943. Small helm in the Clyde is of great importance?—Yes.

2944. And do you consider small helm in narrow waters is best got at by small screening in side lights or large screening?—I do not quite follow you.

2945. The question of helm is a vital one according to you, you must give a ship as little helm as possible—that is essential?—Well, I do not know whether that is essential. If you give a ship helm, and she answers it, it does not matter whether one requires more than the other; providing she answers and steers straight, the amount of helm is not of such great importance.

2946. At all events, you must not alter the ship's course much in the narrow parts of the Clyde?—No, whatever helm you give she must answer readily.

2947. By giving a small amount of helm, of course, I mean turning the ship's head round through a very small angle, that is absolutely necessary?—That is quite true.

2948. Are your duties as a pilot, from that point of view, assisted by having a large angle of screening or a small one?—They are assisted by having a small angle of screening.

2949. You have no doubt about that?—I have no doubt whatever.

2950. You have had a large experience in sailing ships?—Yes.

2951. If you were going to sea in a sailing ship again, would you prefer a large or small angle?—I would have a small angle.

2952. You think, even at sea, you would prefer a smaller angle?—Yes, I consider the disadvantage attending a large screening is greater than its advantage.

2953. When you said that you were not sure whether the lights crossed the bows before, did you mean the whole beam of the light or only the reduced beam from a part of the wick. Did you know, before the change of rule of 1892, that the reduced beams always crossed the fore and aft line of the ship, or did you think that the light was screened so that the screens came and actually obscured the light right ahead?—I thought that the screen was in a line with the inside of the wick.

2954. So that you knew that the reduced beams from the reduced part of the wick always crossed?—Quite so; yes, I was aware of that.

2955. You mentioned the case of a steamer as giving you some trouble in the Clyde, and you were only able to keep out of her way by seeing her hull?—Yes.

*Capt. D. McDonald.*

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2956. Is that a solitary case or a common case?—No, it has happened in my own case, perhaps half-a-dozen or seven or eight times.

2957. Do you think it is rather a common experience in the Clyde?—Yes, rather too common.

2958. And that experience is since the lights of these small steamers were screened to four degrees?—That I cannot say.

2959. It is since 1892. And the supposition is that since 1892 the Board of Trade have screened all ships to 4°, therefore we are justified, I think, in assuming that anything which has happened since 1892 is owing to the new screening?—Yes. Well, I do not know that it might not have happened before that; they might have been badly screened. I do not know.

2960. (*Mr. Scrutton.*) You have stated that only under exceptional circumstances did you break the law of the Clyde Navigation Board with regard to the side of the river upon which your vessel was placed?—Yes.

2961. What exceptional circumstances would that be?—Well, providing a steamer is coming down as I mentioned a moment ago, perhaps she would be too far over to the side, and she would smell the ground, and be sheered across and take the bank on my side of the river; that would be on his port side.

2962. Would going on the wrong side be a matter of accident, or a matter of design?—On my part it would be a matter of design, and on her part it would be a matter of accident.

2963. That would be to avoid her?—Yes, to get a passage out.

2964. These vessels of 26 feet draught, do they go up and down the Clyde at night?—Yes.

2965. How are you working the engines, at half speed, or what?—Full speed in the straight reaches; the average passage is about two hours, unless we have to go in one of the docks; there are no gates to them, just a bridge, and the distance is somewhere about 22 miles.

2966. You would not take the vessel up unless it was a clear night, I suppose?—I would not take her through a dense fog, but it is surprising the weather we go through. I have never known a ship detained from more darkness, no matter how dark the night was.

2967. You have referred to the advantages of large screening as against the disadvantage; that is, 4° as against 2° or against 1°. Would you just be good enough to tell me in a few words what would be the advantages of large screening, and the disadvantages. Take the advantages first, of the large screening—by large screening I mean 4°?—Well, the advantage that I can see is in wide waters; that in trying to shut out the other vessel's light you would pass at a greater distance from her.

2968. Now the disadvantages of large screening?—I must say that I have not just given that the consideration that would enable me to answer the question properly outside. I have thought it out as far as regards my own narrow waters, and I have given a reply to that; but I cannot say altogether all the disadvantages there might be against it in open water.

2969. Still, what you have said as far as I understand it is that in regard to the lights of a large steamer belonging to Glasgow, "I believe they are "screened to the 4° angle, and although we have no "difficulty in passing the other in safety, so far as the "side lights are concerned, that safe position is mainly "due to the fact that owing to the numerous lights "on the side of the ships their outlines can be "distinguished." Do you wish to add anything to that in answer to my question?—No, but I think the inference can be drawn from that, that notwithstanding they are screened across the bow there are other helps which we have through seeing the outline of the hull of a vessel.

2970. With regard to the fine screening, what are the advantages of that?—In fine screening in the river we can keep our position and we lose sight of the other vessel's green light coming down near; if she was screened widely we should be keeping away, and keeping away until we got to the shore.

2971. About the disadvantages of fine screening, you are clear about them?—There are no disadvantages that I know of.

2972. (*Sir E. Harland.*) You were describing the difficulty you have in piloting big ships up and down the Clyde now. I presume that where the two ships are meeting each other, one being a big vessel and the other a good deal smaller, the smaller ship would be disposed to give way a little to the big ship, so as to prevent a block on the river, and a stoppage of traffic; because if the smaller vessel had insisted upon keeping a full half of the river, she might have driven the larger ship too close to the bank and stuck her there and jambed the traffic?—Yes.

2973. Is it customary for smaller ships to do that when they recognise by the number of cabin lights from a ship, that she is a very big ship?—Oh, yes, they can see that.

2974. They are inclined to give way rather to this very big ship?—Yes, generally; but the exceptions are rather numerous where they do not give way as much as they should.

2975. If you are piloting a big ship down should you expect that they would give way?—I should expect they would, and if I were on a smaller vessel I should give way.

2976. You were referring to right-hand screw affecting the steering whether with a port or starboard helm. Did you ever try letting the helm go in clear open water to see which way she would turn without any helm at all?—I have not exactly done that, but I have done what amounted to the same thing—by looking at the amount of helm she carried to keep her steering steady for a certain point.

2977. Supposing you are steering with a common tiller, and you have a right-handed propeller, and you let the tiller go, what would the effect of that be?—The effect would be that you would continually turn the head to port. The amount of helm you require to counteract that is shown at once by the number of degrees you have to turn to keep a ship steady for a given period; it would generally be 8°.

2978. So that with starboard helm she generally keeps going to port?—Certainly.

2979. (*Captain Thomson.*) In the reply you have given to the last question, would you account for the ship answering her starboard helm quicker than the port helm, going ahead, by the direction of the action of her propeller?—Undoubtedly.

2980. Would you think it due to the action of the lower half of the propeller?—I could not divide the propeller in that way, I take the propeller as a whole.

2981. Have you had any experience of hand steering gear in large steamers?—Yes.

2982. As an officer of the watch?—No, as a pilot. We have any amount of quite large steamers coming up with hand steering gear.

2983. But have you any experience of hand steering gear as an officer of the watch at sea?—No, only steam.

2984. Would you tell me what sized steamer you have piloted with hand steering gear, or what length?—Quite considerable sized ships—perhaps 1,300 to 1,400 tons register—quite large ships.

2985. Have you found it more difficult to give port helm or starboard helm?—Well, my experience in that respect has been that it has been very difficult to give them either helm, and if I require to get the helm over I have to slow the engines; I could not get it over while the ship was going full speed; but whether there was any difference between port and starboard, I could not say that I have paid particular attention to that. The result with hand steering gear and steam steering gear has been that ships, when going apparently steady, carried about the same amount of port helm—that is, from 8° to 10°.

2986. Do you think it possible that the officer of a large mail steamer steaming 12 knots may have to call up several men of the watch on to the bridge in order to give hard-a-starboard helm with hand steering gear?—Yes, I think it quite likely.

2987. Do you think it also likely, under the same conditions, that hard-a-port helm might be given by the man at the wheel with the assistance only of the officer of the watch?—With hand gear?

2988. Yes?—And a ship going full speed at the rate of about 12 knots?

2989. Yes?—I do not think so.

2990. But you have had no practical experience of it?—No, but I have had practical experience of ships with hand steering gear going up the Clyde shifting the helm backwards and forwards. I think you might have more experience going up once in that way than going two or three voyages.

2991. You would not think it a discrepancy at all that a ship should answer starboard helm going ahead better than she should answer port helm, but yet that it should require much more force to put the helm a-starboard than to put the helm a-port?—I should not think that it was what I would be likely to expect. I would think the starboard helm would be easy given to her.

2992. You understand it? If a ship obeys her starboard helm better than the port, going ahead, it shows practically that there has been more work done—there has been more effect put upon that ship's stern to turn her?—Yes, but the work that has been done has been done irrespective of the rudder—it has been done by the propeller.

2993. But work must be done in order to turn her; you see there is some resistance to turning the rudder, is there not?—Yes.

2994. The more resistance to turning the rudder the greater might be the effect in turning the ship with the same angle of helm; do you see that clearly?—No, I cannot see through that.

2995. I think you can take it from me that you are quite right in saying that a ship going ahead with a right-handed propeller obeys her starboard helm quicker than the port helm, but at the same time it is very much more difficult to give that ship the same amount of starboard helm than to give her the port helm?—I daresay that may be, but that amount of starboard helm will do twice the amount of work that the same amount of port helm will do. Supposing she had 10° or 15° of starboard helm, that will turn a ship as quickly as if she had 20° or 25° of port helm.

2996. But you will not dispute that it will take twice the number of men to work the starboard helm that it will to work the port helm?—Yes, perhaps it would.

2997. (*Sir E. Harland.*) I think you said a few moments ago, that if it took so many men to give the vessel starboard helm hard over, it would take more men to give her port helm hard over?—Well, I did not exactly say that, but I said I would not be surprised if the officer had to call up two or three men to put the helm hard-a-port. I think that is what I said.

2998. Two or three more men than to starboard?—No, I did not distinguish between port and starboard at all.

2999. Just to clear that point up, take, for instance, a vessel without any helm at all, and the rudder perfectly free; if she had a right-handed propeller and went ahead, she would go to port?—Yes.

3000. Then does that indicate that it would be easier to give starboard helm?—Well, I would have thought so; only that this gentleman here has been questioning me, I am not so sure about it; I did not give the matter attention before, but I just think that if the vessel was inclined to go to port perhaps it would be easier to give starboard helm than to give port helm.

3001. I gathered from your evidence that less power would be necessary to put the helm so many degrees to starboard than to put it so many degrees to port?—That is not exactly what I meant. I meant that, with a given amount of starboard helm on board a ship, the ship would turn quicker.

3002. Then does that not mean that she is more disposed to go to port?—Exactly.

3003. Does it not necessarily follow, that it will require less power to give starboard helm?—Yes, but I understood the question that was put to me was, would it require more power to put that helm hard-a-starboard than to put it hard-a-port. Well, I would have thought at the first blush that it would be easier to put the helm hard-a-starboard than to put it a-port.

3004. On second thoughts is it your opinion that that would be the case?—No, I could not give any opinion upon that matter, only when the helm has been given to her I know precisely how the helm acts, that is, that she will act much quicker with a starboard helm than she will with a port.

3005. (*Captain Hallett.*) Do you think in practice, if you wanted to get your ship's head four points to starboard or to port, it would make any difference which way you would put the helm over?—I think, very little.

3006. I mean, would it require more work?—No, but at the same time, if I had to go four points, and I could go either way, and if there was any danger ahead, and I wanted to turn the ship in a limited area, I would certainly do it on the starboard helm rather than the port helm.

3007. But in actual practice, with a big ship in hand, do you think it does not take a greater amount to port four points than it does to starboard—or perhaps the difference is not appreciable?—No.

3008. (*Sir E. Harland.*) In answering that question, I suppose you are still contemplating hand gear and not steam gear?—It does not make any difference whether it is steam gear or hand gear.

3009. But did you not tell us a little while ago that one of these big ships with hand gear took a number of men to work it, that it was not so easy to get the helm over?—Undoubtedly, that is perfectly clear; but steam steering gear represents a great number of men.

3010. I want you to bear in mind that the answer I presume you have been giving dealt with hand gear, and not with steam steering gear?—The answer I have given just now?

3011. Yes?—The gentleman put the question to me as a practical question; I told you that such a thing would never be taken into consideration—that the difference in the labour would be inappreciable; it would not be taken into consideration.

3012. That is, with steam steering gear?—Or with hand gear. Supposing you required another turn of the wheel, it would be nothing at all. But if you wanted to turn her quickly, you would turn with the starboard helm instead of the port, because she has a natural tendency to turn that way.

3013. (*Captain Castle.*) Is it not a common practice when you have to navigate in narrow channels to stop the engines, put the helm hard-a-port, and then go full speed ahead?—In coming round the turns in the Clyde, where you require every inch of water you can get, the practice is to slow the engines before she comes up to the turn.

3014. To slow and stop?—No, I have never found it necessary to do that.

3015. You have to do it in the Hooghly, and in the Thames, coming round Blackwall point with a flood tide?—We put the helm hard over and let her lift, and when she lifts slowly, give her full speed.

Captain Luke Blumer Hubbäck called and examined.



3016. (*Chairman.*) You are, I think, in the service of Messrs. Alfred Suart & Co. Would you tell me what position you hold?—Master in the merchant service.

3017. How long have you been in the merchant service?—Over 30 years.

3018. And how long have you been a master?—Twenty-six.

3019. And what sized vessels have you commanded?—From 500 tons to 2,050.

3020. Have you commanded both sailing and steam ships?—No, only steam.

3021. Are you at present master of a vessel?—No; at the moment I am on a holiday.

3022. You have, I think, been master, or held some office on the steamship "Prudentia"?—I have been in command of her last.

3023. During your experience on that vessel has her trade been all over the world, or has it been confined to a particular locality?—Well, I have been mostly all over the world, in all waters.

3024. I should like to have your opinion with regard to this rule of the Board of Trade ordering lights to be

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screened to 4°. What is your opinion as to what the screening of side-lights should be?—I should have them the smallest possible angle that could be found.

3025. I do not know whether you have gone into the question exactly of what that angle should be, or whether you desire to put it in the general way you have, namely, that it should be the smallest possible angle?—I have not gone into what the angle should be. There are so many conflicting positions of the lights and screens; but I should say reduce it to the very smallest angle.

3026. Would you reduce it to a smaller angle than is now in force under the regulations of the Board of Trade, namely 4°?—Much smaller.

3027. Before the Board of Trade regulations came into effect what was your experience as to the screening of lights? Do you think they were screened to more than 4° as a rule, or less than 4°?—Well, I have had them screened much less, and I have had them screened a very great deal more.

3028. The vessels you have sailed yourself, for example, during the years you have been master; what would you say as to their screening? Have you had to alter the chocks by reason of this new order of the Board of Trade, and, if so, how?—I have found, under the old rules, before 1892, that the lights were showing across the bow in some instances I should think 6° or 7°, after being screened by the officials.

3029. Then was there, in your judgment, considerable want of uniformity before the 1892 rule, in the way of screening?—I think so.

3030. Some being screened fine and some broadly?—I think so. I have taken ships from various parts of the country, both north and south, and I have found great diversity in the screening of the lights.

3031. In your practical experience have you ever found it necessary, or, in your judgment, desirable, to reduce the angle of the lights after the chocks had been placed by the Board of Trade officials?—I have done it three or four times. I have found it absolutely necessary. As an illustration; in 1892 I took command of a steamer in the Thames (the name is not necessary; you shall have it if you wish it), and the first night in the channel I was going round to see how things were going generally in my new command, and I found I could see the side lights with my own eyes, only 10 feet from the centre line of the ship, although the side lights were placed about 24 feet from the stem on the after end of the forecastle. I took the trouble to take measurements, and from the centre of the wicks there was 29 feet, that is, from centre to centre across the ship, 18 feet forward of the light and 10 feet only from the centre line I could see the side lights distinctly.

3032. And those were lights which were screened, were they?—Yes, screened with metal screens.

3033. Would you regard that particular state of things as a state of things which was desirable? I suppose not; you altered it?—Certainly not. I had it altered in an hour. I turned the carpenter out and had the screens altered at once, and I concluded that those lights would be seen across the bows, perhaps 8° or 10°, and I considered that was not a safe way to go navigating among a lot of ships.

3034. Did you consider that unsafe?—Certainly.

3035. Do you lay stress upon the importance of this fine screening, especially in crowded and narrow waters?—Yes. I think it is of more importance in the narrow waters than anywhere else. Take the very crowded waters on our own coasts, or some of the narrow waters of the Mediterranean, where we might have a vessel on each bow showing her three lights, there are other lights again to the right and left of those, and sometimes if the lights are showing across the bows it is almost an impossibility to tell at what angle those ships are approaching you.

3036. You refer not only to narrow waters such as the Thames and the Clyde, but to such waters as the Dardanelles?—The Dardanelles and the Sea of Marmora.

3037. And the Grecian Archipelago?—Yes, all those places where there is not much room to deviate from the course.

3038. I see that you have instanced the Inland Sea of Japan?—Yes, there also we have to take some very narrow channels sometimes amongst the islands; if the lights are seen across the bow there is no more room to port, and there is something close to you on your starboard side, and *vice versâ*.

3039. Do you have pilots for the Inland Sea of Japan?—No, I have not had them, because in 1874 I first began in Japan waters, and I used to navigate the seas myself afterwards.

3040. But you have local pilots for the Sea of Marmora and the Dardanelles?—No. In Constantinople there are a few local men for the Bosphorus who have left the sea and settled on shore and call themselves pilots.

3041. There is not compulsory pilotage?—No, not compulsory pilotage.

3042. In your judgment, is the relative position of the masthead and side lights an important matter?—Yes, I would not have them before the masthead light. I mean if the side lights were placed in the plane of the masthead light or, as they used to be placed in the early days, abaft the masthead light, immediately a vessel altered her helm, supposing she was approaching on the starboard bow and altered on the starboard helm, the nearest angle to you would increase, the angle from you of the other light would decrease. You know if the angle nearest to you is larger it is impossible to strike you, she is evidently on a course that would clear you, but with the side lights before the masthead light you have altered the thing entirely, because on the same manœuvre the green angle would increase and the port angle decrease, and this would confuse you as to what the vessels were doing if there were several meeting you.

3043. There is another matter upon which I see you desire to express an opinion, that is the practice in some vessels to place the side lights' screens on small swinging davits, which can be swung inboard in stormy weather. I think you have formed an opinion as to that practice?—I think it is a very bad practice indeed, and ought to be put a stop to. There are so many means of altering the angle of the light unknowingly, and screens hung on davits which have come under my own observation are secured by a fore-and-aft stay from the bridge rail. If that stay gets bent and hooks on to the after part of the screen, it reduces the angle, and on the other end it increases it very much. In one case I saw them swung inboard; a sea had struck the light and put the light out, and the officer on the bridge—it was a ship under my own command—thought it would be better to swing it right inboard, and I went on the forecastle to demonstrate to him what he had done, and from the stem head I could see the light.

3044. But the screen was gone?—No; the screen was there, but by being swung inboard the light was showing right on to the stem head.

3045. You have expressed your own opinion as to the side lights being screened to the smallest possible angle. What do you think is the opinion of captains in the same position as yourself; do you think they agree with you mostly?—Well, it is a matter which has been discussed amongst us a very great deal, and I have not heard one dissenting voice to the small angle amongst my own profession. They are all of the same opinion, that it should be screened to the smallest angle.

3046. (*Rear-Admiral Andoe.*) Are you aware that if the lights are screened to a line drawn from the inner edge of the wick to the outer edge of the chock parallel to the keel, so that the full flame of the light would show right ahead clear of the chock and the screen, that a considerable amount of light would always cross the bow at a certain distance from the stem of the ship?—Yes, reflection.

3047. May I presume that you would like to have your bow light showing ahead of the ship, or ahead of the light, with the full power, not with the reduced power?—I do not think it is essential that the full power of the light should show right direct ahead.

3048. Do you think that it is not so necessary as anywhere on the bow?—No; two to three points on the bow, I think, is the most effective focus for the light.

3049. Many of the ocean tramps, as they are called, yaw a good deal, do they not, in steering?—Yes, some of them very much.

3050. How much do you think, in moderate weather, not a gale of wind and not dead smooth water, but moderate weather, say, coming up channel?—It is quite usual to meet them varying two to three points, a point to a point and a half each way.

3051. Considering they steer so wildly, how does very fine screening affect them?—I was not speaking of the ocean part, only for the narrow channels; certainly I would be very loth to navigate a narrow channel where one of these vessels was yawing two points.

3052. I am not speaking of narrow waters, but of the English Channel, before an ordinary westerly half a gale, with a considerable sea following; if the tramp steered within a point either side of her course, that would be very good, I suppose?—A point on either side would be very good steering.

3053. Therefore, if she were approaching another vessel a little on the starboard bow, she would show both her lights, first one and then the other; to the vessel approaching her she would be showing, as it were, both lights?—Yes, both lights, red and green.

3054. Supposing that one vessel A were very finely screened with an electric light, so as to send her lights straight ahead, scarcely at all across the bow, and that another vessel B were coming down half a point or a point on A's starboard bow. [*Describing with the models.*]—Yes.

3055. We might presume that, at half a mile, in a a couple of minutes, both steaming in opposite directions, you would pass one another. A sees two lights, and B sees the green light only; seeing that it is on her starboard bow, she starboards a little to give her a wide berth, but A, in consequence of the yawing of the approaching vessel, has seen both of B's lights, and has determined to port?—That is not seamanship. I cannot agree to that; the man has no business to make up his mind in such a hurry.

3056. It is half a mile. It would only take two minutes supposing they were each going 12 knots?—But they must have been seen before half a mile.

3057. But we will take it as moderately thick weather; *this* ship is yawing and coming along like that, and shows both her lights, what would you do?—If I saw both lights, and I was giving her the starboard helm, I would give him a broader light.

3058. You would give starboard helm?—Yes, give him a broader light.

3059. But then you would be going against the rule of the road, would you not?—No.

3060. If she is nearly ahead, showing both her lights?—No, she is shutting in first one, and then the other—she is keeping quite straight.

3061. Would they shut in actually like that?—Certainly, yawing a point each way.

3062. How do you know how she is steering exactly?—I should say that she was coming parallel to me if she was showing me first the red and then the green light.

3063. Then you would go off on your starboard helm?—Yes.

3064. I should have thought you were going against the rule of the road, because she is ahead, or nearly ahead?—If she gave me a steady light, I should act on the port helm.

3065. But if she was yawing you could not tell how she was steering?—Then I am giving her more room.

3066. There is another question. Supposing both are finely screened, and are both steering steady courses—two mail steamers—and showing green to green, if they continue their courses according to the rhyme which says "Green to green, red to red, perfect "safety go ahead," as the officers of the watch might do, thinking they were following that rule, would they not pass very close—too close for safety?—Well, I should think no officer on the bridge would be so ignorant but what he would know whether he was going to pass that ship so close. It is an undefined and inexplicable thing, but an officer on the bridge, if he looks at a light, can tell if he is going so close; if they were approaching close they would starboard their helm, but if there was a fair green light to be seen, there would be no occasion to do that at all.

3067. Then they might go very close indeed. Do you think it is desirable to place more discretion in the hands of the officer of the watch than is the case with the present law?—No, I think the law as it stands is very well. Most of the young officers that have been with me seem to grasp it pretty well.

3068. But then, if you go by that law, "Green to green, red to red, perfect safety, go ahead," you go straight on your course instead of giving the starboard helm and keeping away; would it be necessary to alter that law, or alter the wording of it, rather?—I think there is another part of that, that the officer of the watch has to do everything to avoid a collision. If he sees the green light so far ahead that it is likely to pass close, naturally he would starboard his helm to give a little more room.

3069. Then you think upon the whole it would be better to leave a little more discretion in the hands of the officer of the watch than to make such a hard and fast rule as at present, with the broader degree of screening? Because the object of the broad screening, the Board of Trade contend, is this, that the light being thrown across the bows to a certain extent, directly both vessels see the lights, they immediately port their helm, and go clear of one another in that way?—I have never seen it interpreted in that way. That may be the idea of the Board of Trade, but I have never seen it interpreted so. I think it is a generally understood thing amongst nautical men that if a vessel is approaching and yawing, showing first one light and then the other, whichever light you are getting broad, they keep to that; and I think, as a practical man, that it is a point of safety to do so.

3070. It depends upon the side on which you find yourself?—On which you get the broad light. Of course, if both are showing three lights all at once, then act upon the Board of Trade rule, "If you see three lights ahead, port your helm, show your red"—Mr. Gray's rhyme.

3071. Have you frequently observed in steaming in the channel in rather narrow waters that vessels very suddenly cross your bow; after nearly crossing it one way, they hard-a-port and come the other way?—Oh, yes.

3072. It is a common occurrence, is it not?—Yes.

3073. What is that due to?—Different things. The man at the helm may misunderstand the order. There are such things as currents and tides.

3074. I am putting aside the currents altogether?—I have not seen that, only in one instance—a Liverpool steamer—we got close together.

3075. But on the whole you think that if the side-lights were screened to as small an angle as possible, it would tend to safety. When I speak of the channel I mean the English Channel?—Yes.

3076. Where you meet a large number of ships?—Yes, I am decidedly of that opinion.

3077. (*Captain Thomson.*) Have you any experience of hand steering-gear in steam vessels?—Not of late times, in early days I had.

3078. As an officer of the watch?—Yes.

3079. Have you found it more difficult to put the helm over one way than the other?—Are you speaking of working with the screw, or with side wheels?

3080. I am speaking of screw steamers—speaking of handgear?—In hand gear I have found a difficulty in getting the helm a-starboard.

3081. Do you find it more difficult?—Well, more difficult; you can get the port helm at a larger angle and quicker than the starboard helm.

(*Mr. Bolam.*) With a right or a left handed propeller.

3082. (*Captain Thomson.*) I am speaking of a right-handed propeller?—I have never been with a left-handed propeller, always with a right-handed propeller.

3083. I want you, just for the sake of accuracy, to take the compass card when I ask this question: Supposing you have a steamer steering due north in moderately thick weather—say you had run out of a hail squall or a small fog bank, and you suddenly see both the side lights of another steamer, the red light may appear a little the brighter of the two, and that red light bears N. 5° east, what would you do?—Seeing both lights?

3084. Yes?—Well, am I to understand that she is so close that the green light would bear less than 5° easterly.

3085. Never mind. You need not suppose they are too close. Suppose you run out of a small fog bank.

(*Chairman.*) What distance will you put?

(*Captain Thomson.*) Well, shall I say half a mile?

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(*Mr. Bolam.*) The green would, as a matter of fact, bear a little less than the red. Captain Thomson is giving you 5° easterly, therefore the green would bear a little less than that east?—Well, I think the proper course would be to port the helm.

3086. (*Captain Thomson.*) When I asked that question I did not call your attention to the screening?—No, I am speaking with the ordinary screening.

3087. Now, I want to ask you the same question, and I must ask you to consider the question of screening also. In porting as you said you would, would it not give you great confidence, if you were certain in your own mind that when you ported the vessel to which you ported would not starboard?—Well, that is so. At all times it gives me very great confidence to know that that vessel is not going to starboard.

3088. Now the question of screening comes in. You understand that if your lights were so screened as to be visible over a crossing angle of 5°, or more, the vessel to which you have just ported, would see both your lights?—Well, allowing mine to be screened in the same way as hers.

3089. Yes; that is so, is it not?—Yes.

3090. Therefore you seeing both her lights, and she seeing both yours, what would take place?—Both would port their helms.

3091. I am asking you now what that ship would do if she saw both your side lights? You told us what you would do; what would the other ship do?—I should think the other ship would port also, seeing both lights.

3092. Why do you think so?—Because she can see both lights; knowing that I can see both of hers in the dark, she would then act upon the rule of the road, both ships porting their helms; I should expect her to port according to the rule of the road.

3093. Now, take the case, if you please, where your lights do not show across the bow 5°, but only 2°. What light will that vessel see to which you have just ported?—My green.

3094. The green and the masthead?—The green and the masthead.

3095. Nothing else?—No, she will not see the red light.

3096. In that case, would you have the same certainty that that ship would port as in the first case?—No, I would not have the same confidence.

3097. (*Mr. Scrutton.*) Is the other vessel to be screened 2° as well?—I understood that the other vessel was screened 5°, not 2°.

3098. (*Captain Thomson.*) I am sorry I did not make myself clear. I am assuming that both ships are screened alike?—Then I should not see his red light at all.

3099. The *data* I gave you was that you saw both side lights of the steamer?—Yes, but you told me she was screened 5°.

3100. No. At first I did not say anything about being screened to 5°. I did not give you any screening at all. I did not state any number of degrees?—Then I misunderstood you.

3101. Would you like to amend your answers?—If there is anything you think necessary, I will.

3102. I will ask you the same question again. In the same conditions, if you see both side lights of a steamer?—But will you not give me the screening?

3103. Why should I give you the screening?—I say if she is screened to the smallest possible angle, I know now what she is seeing; how her lights bear. But if the screening is erratic, I do not know.

3104. Which screening do you prefer?—Small screening.

3105. I am now giving you the screening to 2°. You see the two lights of that steamer at a moderate distance; your ship heading north. You see the sidelights of that steamer bearing 5°; what do you do?—Port.

3106. Now, you know at that time the ship to which you are porting can only see your masthead and green lights?—Yes.

3107. Therefore, you are not bound to assume that that vessel will port, are you?—Yes, that man ought to know by the angle he has got me upon that he is showing me both his lights, and he knows it is my duty by the rule of road to port my helm to his two lights. That is as near ahead as you can possibly be.

3108. But does not the rule distinctly say that the port helm rule does not apply at night time, when only one coloured light is seen?—Yes, but I see two. I have ported.

3109. But that vessel, you told me, would only see one?—But I do not see that he need port at all. I will go clear of him. I will show my port light, and go clear.

3110. I think if you will just answer the question it will be better. Would you like to use the models?—No. I perfectly understand your question.

3111. Of course models are not quite the same thing; but there you are, we must exaggerate a little. Assume the angle, that is the position; that steamer's two lights are bearing, say, 5° on your bow, you heading north; you told me you would port (*describing*). Do you still say you would port?—I would port for those two lights.

3112. Now you see that that vessel, owing to your lamp being screened to 2° only, sees your green and masthead light?—Yes.

3113. Therefore there is nothing in the rule of the road that compels him to port?—No.

3114. He might, on the other hand, starboard, might he not?—Would not that be acting against the rule of the road? He knows he is showing me his two lights, and assumes I am porting.

3115. You must assume that both ships alter their helms at once. That is how collisions come about. If you waited to see what that ship did there would be a collision. But that is the difficulty?—The duty of this vessel is to port.

3116. You think so?—Yes.

3117. Now, you see in the case of fine screening, there is a doubt about what that ship will do, and under what article of the regulations she is to act. That ship might say, "I will starboard," and keep under a starboard helm, and this one might say, "I shall port"?—If he does not touch his helm at all, of course, this one in porting will go clear.

3118. But there is always that uncertainty that he might starboard?—Most of the collisions which I know anything about are just caused in that way, where the man has attempted to do what he should not.

3119. (*Captain Hallett.*) Just one question upon that. This vessel, which sees only your starboard light, has no business to touch her helm until you have made a movement; if you have her on your starboard bow it is your duty to get out of the way, is it not?—Yes, it is my business.

3120. Therefore, if you port to her and show her both lights——He will see my two lights as I alter under my port helm.

3121. And then what is his duty directly he sees both your lights?—To port.

3122. And that will take you clear?—Yes.

3123. The Board of Trade, you know, screen to 4°?—Yes.

3124. Upon the assumption that anything inside 2° brings you dangerously close in passing. Do you think with 4° it is safer to port and pass that way, or to continue your course at a known distance of 180 feet? Do you consider that there is room at half a mile on the 4° angle, or do you consider there is any danger in both putting their helms to port?—I should not like to try it.

3125. You would rather give her a touch of starboard helm and go out of it, in fact, you would rather keep your course and pass that way?—That is what I should think of doing; I would not like to try the port helm.

3126. You would not like to try the port helm with another vessel 4° on your starboard bow, and only half a mile distant?—No.

3127. With regard to what you said of a vessel altering her lights. You have that vessel there, and you say if she puts her helm to port she brings her red and white lights nearer together (*describing*)?—Yes.

3128. And you go by that?—Yes.

3129. But now, suppose you had the red and white lights at that angle; if she puts her helm to starboard

she would bring them nearer together, and on that side it would be widened so that you could not tell?—I do not clearly follow.

3130. That vessel puts her helm to starboard; she brings those two lights nearer together, and gradually brings them in line (*describing*). You are here; as she goes under the starboard helm she brings the two nearer together?—Yes.

3131. Supposing, instead of being there, you are here, and she gives starboard helm, now she is widening that angle?—Yes.

3132. Therefore it can be no guide; sometimes she is widening and sometimes she is narrowing the angle as you get to the right or left of the line, which is at right angles to that?—Yes, but that is assuming that the lights are up there.

3133. You advocate their being put there. When once you cross the right-angled line you get the opposite effect?—That is my idea, if she was right ahead, or on either bow as the helm was moved (*describing*).

3134. But how can you tell whether it would put you there. One is under the starboard helm and the other under the port helm, then you cannot tell what she is doing?—But if I had seen as wide an angle as that, I should know the ship was narrowing on me. Knowing the lights were placed in that position, I would know I had her at a very broad angle.

3135. You do not know the beam of the ship?—But it is not necessary, because we are speaking now of the base line from the plane of the masthead light.

3136. It will widen until you get there; there is your broadest place; as you get a little further on your base comes gradually up to there?—As soon as you have passed the broad base you are done with, you are free from danger; of course, if you are on the starboard helm you must port, and then you have to pass that way. It cannot matter at all.

3137. But you cannot tell how she is going?—Yes, you can, she may be going that way or that.

3138. But still it is no guide?—Yes, it is a guide, because which ever way she is going you know she is giving you her broadside.

3139. Do you consider that in practice the difference between putting your helm to starboard and putting your helm to port in open water is of any importance, as regards the amount of power required?—Sometimes they give a very wide sheer. I have found the ship will act better on the port helm than on the starboard, with a right-handed propeller, and while going full speed ahead. Now, with steam gear you can put the helm right over from 45° to 50°, and move her very quickly, and practically, there is very little difference between the port and the starboard helms steering by steam; but by hand, I say it is of great importance.

3140. But in the open water?—In the open water, with nothing in the way, it does not matter how long you take.

3141. In open water it is hardly of any practical importance?—Of very little importance.

3142. (*Sir E. Harland.*) Referring to the masthead light being at some angle or other to the side lights, are you an advocate of having some fixed angle at which the side lights should be abaft the masthead light?—Either in the plane or abaft; I am not particular how far, as long as I know they are abaft the masthead light, and not before. I do not mind.

3143. If you could place those side lights, say, at an angle of 45° abaft the masthead lights in these large steamers, would that be about what you think would be the best thing?—Well, that would be rather small for a narrow beam steamer.

3144. Does it depend in the slightest upon the beam? Does it not rather depend upon the height of the mast-head light? I am referring now to being able to recognise whether the ship is abeam of you or not?—No. I do not think you could tell if she was right abeam or crossing at right angles.

3145. Supposing that the side lights were at an angle of 45° abaft the masthead light, and that you saw the side light and the masthead light at such an angle and such a distance, what would you conclude?—That she was crossing.

3146. You would conclude that you were going fair for her, that she was lying abeam of you?—That she was lying right ahead.

3147. But supposing that that angle was very much less; that it became so ultimately in consequence of her being bows on to you. If you turn that vessel bow on, that angle between the masthead and the side light is very small (*describing*)?—Yes.

3148. Would that be of any advantage to you?—Yes, certainly, I would know she was coming nearly end on.

3149. Then, if when they relatively change, you are able to recognise what course the ship is taking, would that be of any advantage?—Yes, it might or it might not be convenient to me to give a hard port helm or hard starboard helm, as the case might be.

3150. I am referring to the question of your not knowing what course that ship is steering?—Yes, it would be material.

3151. Then would you advocate there being such an arrangement in the future?—I would, decidedly.

3152. Would you prefer another position for those side lights (*describing*). I think you mentioned the lights being plumb with the mast?—Yes.

3153. Would you prefer it to the side light being at some angle, say 45° abaft the masthead light?—Plumb of the masthead light.

3154. Supposing they are plumb of the masthead light, how would yoube able to recognise whether that ship was crossing your bows or not?—The angle would be very small, but I would still have it.

3155. But if it were plumb?—I do not mean up and down the mast, I mean at the ship's side.

3156. But if the side lights were plumb of the mast-head light, and that vessel was beam on to you, then, I presume, you would know that there was no angle whatever?—I should presume she was right beam on to us.

3157. Then, when she was making right for you, the relative angle between the mast-head light and the side light would be due to the beam of the ship?—Yes.

3158. And the height of the mast-head light?—Yes.

3159. Would not that be a very much less angle than 45° generally?—Yes, much less.

3160. Then, would you have the same scope for judging the position of that vessel on that plane as against having the side lights 45° abaft the mast-head light?—I think so.

3161. Would you prefer to have the side lights plumb of the mast?—Plumb of the mast.

3162. Has the idea ever occurred to you of having a second mast-head light down on the stay below the ordinary mast-head light?—What for?

3163. To give you an indication of the course that this vessel is steering?—I would not have any more lights.

3164. You have not heard of that?—No, I would not have it.

3165. (*Chairman.*) You do not think it desirable to have any more lights?—I want no more lights.

3166. (*Sir E. Harland.*) But I suppose you recognise that it would also give you an indication of the course of that vessel?—Yes, it would take a long time to think it out.

3167. Supposing it was so (*referring to the model*).—Then it would become a leading light.

3168. Would you be able to judge by that arrangement what course the vessel was steering?—Yes. I should be able to judge, but it would be very conflicting with the many lights we have about a steamer's bridge; with a leading light under the mast-head light we should not know which was which.

3169. One of the witnesses we have had recommended that?—He may have had a reason for it, but I cannot see any.

## Wednesday, 29th May 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Mr. BOLAM.
Captain CASTLE.
Sir FRANCIS EVANS.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary*.

*Capt. A. Mensing.*

29 May 1895.

Captain ADOLF MENSING called and examined.

3170. (*Chairman.*) You are a retired captain of the Imperial Navy of Germany?—Yes.

3171. I believe you represented the Empire of Germany at the Washington Conference?—I was a delegate from Germany.

3172. I think amongst other things at the Washington Conference you considered the question of screening side-lights?—Yes.

3173. I am not quite sure by what process the Conference arrived at its conclusion; was it considered in committee?—The subject was first mentioned in the Committee on Lights, when a report on trials of running lights and sound signals, by Captain Chadwick of the United States Navy, was submitted. The deliberations of this Committee, of which I was a member, did not, however, lead to any definite proposal.

3174. Perhaps you will tell me, if you can find it, what was the exact resolution at which the Conference arrived?—Certainly. At the first reading an amendment was brought in by the delegation from the Netherlands, by which it was proposed to have the side-lights so fixed that they should cross at a point 100 metres distant from the bow.* This amendment was lost. The next time that the question came up was later on, during the second reading.

3175. When you say this amendment, you mean the amendment to the international regulations?—Yes.

3176. And that had been proposed as an amendment to the international regulations?—Yes. The second time the question came up, the amendment was brought in by the German delegation, and referred to Article 2 of the international regulations. This was necessary, because the articles had been renumbered after the first reading, and the present Article 3 had been given Number 2. The German delegation then proposed that in the present Article 3 the words "more than half "a point" should be inserted after the word seen," so that the paragraph would read altogether, "the said "green and red side-lights shall be fitted with inboard "screens projecting at least 3 feet forward from the "light so as to prevent these lights from being seen "more than half a point across the bow."† This was the amendment that we proposed, and that we hoped to carry. We gave it up, however, in favour of a proposition made by the delegation of Great Britain, who wished that this matter should be left out of the rules, and put into an annex, and we agreed to this. I am sorry now we did, because I think that a great deal of discussion might have been avoided if we had kept to our proposition. The amendment brought in by the first delegate of Great Britain reads: "The side-lights "should be so screened as to prevent the rays of light "being seen more than half a point across the bow," and provided that this regulation should be put in Annex B.‡ As it was adopted this regulation was left out of the rules. This, from the very first, gave those who opposed us a chance of saying that we wanted to make one law in the rules and another in the annex.

3177. Of course as carried out in that form it was not an amendment to the international rules—it was only a regulation outside the international regulations?—I did not consider it so. We had put in this annex a great deal of matter that we thought would make the rules too complicated and that should not be absolutely necessary for a seaman to know; but that, nevertheless, should be binding for the persons fitting the lanterns or making them; we endeavoured to put all such matter in the annex so that we should not overburden the memory of the seaman.

3178. I only mean this: that those who decided to put this matter into the annex and not to make it an amendment to the rules were, I suppose, of opinion that they were not altering the international rules by doing so?—Exactly so. It was the general feeling of all the members of the Conference that that should not be done unless absolutely necessary. We have stated at different times during the discussion of this article that nobody thought of altering the rules; that all we wanted was to state what, *de facto*, had been the rule for some time, and so prevent in future the recurrence of facts that had been brought to our notice in an official way during the sitting of the Conference. These facts, I suppose, I can refer to now. In the report of Commander Chadwick, U.S. Navy, cited above, he speaks about the side-lights of the United States ship "Yorktown," a new cruiser which had been fitted out about half a year previously in the United States Navy Yard, Brooklyn, and says: "I find that the light itself will "show"—I leave out a few words—"across the bow "1¾ points." Now we said if such a thing is possible under the old law there ought to be something done to prohibit it explicitly in the future, and if the matter has not been made stringent enough before, we had best make it so now; because we were convinced that it was a most dangerous practice if, of two ships meeting end on or nearly so, one ship was screened in one way and another in a different way.* The second fact that decided us to bring this matter again before the Conference was a translation of Article 15 that was given to us by the Chilian delegation. It is printed in Volume 3 of the Protocols,† and reads thus:—"It is to be under-"stood that ships are end on or nearly end on if by "day one ship sees the masts of the other in a line with "her own or less than 2½ points out of that line, and "by night if one ship is in such a position as to divide "the two side-lights of the other ship by her stem." We did not understand the meaning of the latter part of the sentence exactly, but when we read this rule we felt that this matter must be settled for good.

3179. Perhaps you would be kind enough to tell me what, in your judgment, it was that induced the Washington Conference to adopt the precise angle of half a point?—Well, at the first meeting——

3180. Excuse me a moment. May I first ask you what, in your judgment, is the meaning of the recommendation of the Conference. What would it be translated into the language of the Board of Trade rule which provides that side-lights are to be screened to an angle of 4°. As compared with that, what does the Washington Conference regulation, in your judgment, recommend?—The Washington Conference recommend that the light, for instance, on the port side, should show across the starboard bow for half a point and no farther, and *vice versâ*, so that the two lights ahead would form an angle of one point, roughly speaking—of one point before the bow, in which space both side-lights should be visible, so that each light is seen half a point on the opposite side of the amidship line or the line of keel.

* Protocols of the Proceedings of the International Marine Conference. Washington text, vol. I., p. 220 sq. British text, Parliamentary Paper C. 6133, p. 109 sq.
† Washington text, vol. II., p. 1156 sq. British text, C. 6255, p. 185 sq.
‡ Washington text, vol. II., p. 1166 sq. British text, C. 6255, p. 190 sq.

* Washington text, vol. II., pp. 1162-1164. British text, C. 6255, pp. 188-189.
† Washington text, vol. III., p. 44. British text, C. 6132, p. 118.

3181. So that they recommended screening at an angle of about 1½° more than the Board of Trade recommend?—Yes, exactly so.

3182. Translating it into an exact number of degrees, the Conference recommended that each light should be screened to an angle of 5⅝ degrees?—Yes.

3183. Now perhaps you would kindly tell me how it was that you induced them to prescribe that precise angle of half a point?—When the subject was discussed for the first time there fell from the first delegate of Great Britain a remark which made a very deep impression on us. It had been proposed, as I said, to have these lights so fixed that their rays should cross the bow at a certain distance, say, 100 metres. Mr. Hall (now Sir Chas. Hall) objected to this and said that it was impossible to adopt such an amendment, as the rule would apply to ships of different breadths of beam, and that it would be much better to take the angle of vessels from the keel.* He then explained that, according to the instructions issued by the Board of Trade, the lights should cross before the bow at a distance, which about equals five times the beam of the vessel, and that this would give us an angle of 5°. Now when the German delegation decided to press this matter we naturally wanted to make our proposition as safe to follow as we possibly could. As the fixing of the screens had been left in Germany rather to the good judgment of the captains, we had nothing from our own country to offer that would fulfil this condition. So we were very glad to be able to fall back on this rule of the Board of Trade. We said to ourselves, here we have a rule that has been in force for a number of years, that has never been complained of, and to our knowledge never has caused an accident. As we understood it, this rule was that the lights should be made to cross five beams before the bow. Now, if we take the tangent of half a point, we find that that corresponds to the ratio of $\frac{1}{10}$ even better than that of the angle Sir Charles Hall proposed to us, viz., 5°.† If we assume that a ship's side-light stands at the distance of half a beam away from the line of keel and that the lights are to cross at 5 beams' distance before the bow, this ratio is $\frac{1}{10}$, and this corresponds very nearly to the tangent of half a point, whereas the tangent of 5° corresponds to the ratio of 87 : 1000. The other reason was that we did not want to make the point of our rule too fine, so that a magistrate or judge not fully conversant with matters nautical might not be led into ruling a case out of court, if, for example, a ship, otherwise not to blame, was proved to have the side-lights screened to 4° or 6° instead of the 5° prescribed by the rule. I think these were all the reasons we had in bringing in our amendment, and I believe our views were shared by a good many members of the Conference. At least we were told this in private conversation, so that we were pretty sure that our views represented those of the great majority of the Conference even before the discussion had begun.

There is one little thing, I think, I had better perhaps explain here. I have seen it stated in print in one of the marine journals of this country that I am supposed to have committed a blunder that eventually caused the Conference to adopt a resolution which was the opposite of what they wanted to do. Now this is entirely a mistake, though it may have been caused by the text of the official Protocol itself. But the Protocol cannot be considered in any way an accurate account of what I actually said. There was only one stenographer at Washington, who was sitting opposite to me at the end of a long table, around which, sometimes two or three deep, the 60 delegates sat. There was naturally a good deal of conversation going on amongst them. I am in the habit of talking rapidly, and easily get a bit excited, so it must have been very hard for the stenographer to take down what I said.

However that may be, I found after one or two trials that it took too much time to correct the stenogram, as I had a great deal of Committee work to do. So I soon gave this up altogether. Of course, I alone am to blame if the Protocol became inaccurate in that way, but so it actually is.

3184. Let me call your attention to what you are supposed to have said and upon which perhaps the misconception has arisen. I have got it here in the Blue Book. I do not know whether it is in the corresponding page in that volume?—December 1889, you mean?

* Washington text, vol. I., pp. 221-222. British text, C. 6133, [illegible].

† Tangent of 5° = 0.08779. Tangent of half a point = 0.00934.



3185. Yes, the words are,* "There is very little more "to be said except to explain how we came to adopt "the angle of half a point. As far as I know there are "only two countries in which the Rule where the "lights should cross each other before the bow is "accepted. One is Denmark, in which country the distance is settled to be about a cable's length which "would be 185 metres, so the angle would be much "less than the one which we propose now; and the "other country is Great Britain. There is a table here "from which I get the French translation, in which it "says that for the beam of a ship 20 feet broad, the "shortest distance at which these rays should cross "each other is about 200 feet; that is to say, the rule "laid down by the Board of Trade comes practically "to this: that at the distance of 10 beams or 10 times "the breadth of the beam there should be a distance "before which these rays of the side-lights should not "cross. That makes half a point." Now is that accurate?—That is not accurate; why, I knew all the time, as I have told you before, that it was five beams Sir Charles Hall recommended to us. You will find the reference to the five beams on page 221† of the Protocol, Vol. I. Now if you take the angle of 5° it gives you a distance which about equals five times the beam of the vessel; that was the rule he gave us, and that was the rule we followed, I want also to call your attention to page 1178.‡ I think it is here somewhere where I speak about this.

3186. (*Mr. Ismay.*) Is that where you speak of the Board of Trade being considered a body of some authority?—Yes, there I said it again. I knew all the time that if the rays of the side-lights were made to cross at 5 beams' distance before the ship, the corresponding angle would be about 5°, and that is the only explanation that I can give you now. I have not got anything to go by except my pretty good memory, but I believe that at this place I made use of the expression "half a beam." If you will kindly look at page 1163§ of the Protocol, you find a diagram there that I drew, and that, I hope, proves that I was well aware what I was talking about, particularly if you will carefully read this sentence:— "But here we have got it proved by actual measure- "ment that in one of the latest ships this angle has been "increased to 1¾ points, so that in front of the ship "these lights have 3½ points on each side." This may not be very good English, but I am sure that anybody comparing all this will hardly find me dull enough to confound these two angles, and to really have committed the very apparent blunder I stand accused of, nor the Conference careless enough to have been led astray by it.

3187. Now would you consider it a dangerous practice to screen lanterns so as not to allow any of the rays of the side-lights to show across the bow?—I would not only consider such a practice dangerous, but I would, at the same time, believe this to be in direct opposition to the spirit of the existing rules. In order to prove this I think I shall have to refer to some experiments made at my recommendation by the Physical Technical Institute of the German Empire then under the charge and presidency of the late Hermann Von Helmholtz. They were executed by Messrs. Brodhun and Lichtenthal, both doctors in philosophy and men of science, for years accustomed to photometric measurements of precision. The photometer used was lately constructed by Doctors Lummer and Brodhun. It is about the only one that allows the power of differently coloured lights to be measured with some degree of accuracy. The unit of light was the well-known Hefner lamp, the power of which is about equal to 0·8 of an English standard candle. The result of these experiments may be considered absolutely reliable within narrow limits, say, 2 per cent. The side-light experimented with was made by Herr Schulze, of Berlin, one of our best German makers. The screen used with it was one metre long, which is equal to about 39¾ inches. Instead of the wooden chock, usually used, a thin iron plate with a sharp edge was fastened to the screen, which made a better cut off than a chock. The whole arrangement was mounted on a turn-table, provided with a division in degrees and half degrees, so that the screen could be made easily to form any desired angle, with a line connecting the light and the photometer. The line in which the eye of the observer could just see the inside edge of the flame clear of the



* Washington text, vol. II., p. [illegible]. British text, C. 6255, p. 189.

† Washington text, vol. I., p. 221. British text, C. [illegible], p. [illegible].

‡ Washington text, vol. II., p. 1178. British text, C. 6255, p. 185.

§ Washington text, vol. II., p. 1163. British text, C. 6255, p. 189.

*Capt. A. Mensing.*

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edge of the iron plate at end of screen served as line of reference. The results derived from these experiments have been put by me in a tabular statement which I lay on the table.* The different measurements are given in it exactly as they were given me by the officials. It is easy with these results to draw a curve, showing in what ratio the power of the side-light is gradually diminished by the interference of the chock and, again, how the distance at which the light can be seen will be lessened correspondingly. I have one of these diagrams† which I would like to submit to the Committee. In order to explain this diagram, I would like to say that I have assumed the light at its full power to be visible two nautical miles. The line L M represents the prolonged midships line; if the light should be so screened as not to allow any light to be seen across the bow, in the trumpet-shaped space P L S none of the side-lights would be visible.

3188. (*Mr. Ismay.*) May I ask if Captain Mensing gives us to understand that if the lights do not cross the bow there will be a dark lane for two miles in advance?—Certainly.

3189. (*Sir F. Evans.*) That is, presuming your ship keep on a steady course?—I will come to that.

3190. (*Chairman.*) You are taking the case now, as I understand it, of the whole of the rays being screened off?—Exactly, screened off so that none of them can be seen across the bow.

3190*a*. That is to say, the chock being screened from the outer side of the wick or flame in a line parallel with the keel?—Exactly. In that case none of the lights will be seen inside the curves P L and S L.

3191. (*Rear Admiral Andoe.*) Then you cut off the light entirely?—Entirely.

3192. (*Mr. Ismay.*) The diffused rays as well?—If you notice in the diagram at the very beginning the green and red lights show together, that must not be entirely left out of consideration.

3193. (*Sir F. Evans.*) You say you put the chock right in front of the wick?—No. At 3 feet distance I screen the light so that none of its rays can be seen across the bow.

3194. (*Mr. Ismay.*) What about the reflection? Suppose a lens between your eye and the light?—The lens of a ship's side-light influences the direction of the rays of light only in a vertical direction, so that all the rays of the flame are compressed into a flat luminous disk directed to the horizon. But if the lens is properly constructed and the light is in focus, their azimuthal direction is not altered at all, so that a ray always remains in the same vertical plane.

3195. (*Chairman.*) I was just going to ask you, is that the result of actual experiments?—Actual experiments.

3196. Or theoretically?—Actual experiments. If you will give these figures I have given here to any one conversant with optical science he will certainly come to the same results as those on which this diagram is based. I am quite sure of that.

3197. They are worked out. I do not profess to be skilful enough to do it myself, but they are only worked out from these figures given in this table?—Exactly. Now I would like to explain that though I consider this dark space extremely inconvenient, I yet consider the greatest danger of such a manner of screening to lie in the fact that nowhere can the two side-lights be seen at the same time together. This fact, I believe, is proved conclusively by this diagram, yet it is so little understood. People generally seem to think that in some mysterious way, notwithstanding this dark space separating them, the two lights can be seen together right ahead. This diagram, I believe, goes far to show that this is *impossible*. Of course if the ship yaws, one of the ship's side-lights—say the red, —may become visible to another ship meeting this end on. And the red light may be followed, after seeing none of the lights for awhile, by red turning up again. But you may just as much expect green to appear or both lights to remain invisible. Now I should like to appeal to those gentlemen in this Committee who have been following the sea to bear me out, when I say that such a state of things would be intolerable, and would lead to indecision, to doubt and uncertainty, and, ultimately, to confusion; and confusion and uncertainty are the two things that bring about, to my way of thinking, more collisions than all other causes put together. For these reasons I am very much opposed to any kind of screening that would allow a dark space anywhere to be seen right ahead of the vessel, so that only one light can be seen at a time and never both together. And such screening, as I take it, would not only be against Article 3, which provides that the light of a side-light shall be unbroken and uniform from right ahead to two points abaft the beam, but would also be against Article 15, because this clearly starts from the proposition that both side-lights shall and must be visible ahead of the vessel at the same time. This, I repeat, can only he done if the two lights are made to cross before the bow. I even go farther and say that if it should be decided to have the lights screened so that they do not cross at all, Article 15 would no longer have any meaning for navigation at night. For it distinctly provides that it does not apply to cases in which a green light is seen without the red, or a red light without the green ahead or anywhere else, and that is just what would happen if the side-lights are not allowed to cross at all.

3198. May I ask you, Captain Mensing, whether you consider the proposed angle of 4° is a good one?—Yes, I believe this to be the case; and, in order to make my views on this point clear, I have another diagram here which I beg to submit. By looking at this diagram it will be easily understood how broad the space would be, in which both side-lights will be visible if they are screened, so that they show 4° across the bow.* I have taken again here, as line of reference, the midship line of a ship. Now, if the ship's lights are so screened that the uttermost rays do not go beyond 4° across the bows, then these two lights will not show in all that space which is bounded by the two straight dotted lines forming an angle of 4° with the line of reference, as generally has been assumed so far; but they will only be visible within the space P L S, *i.e.*, as far as the green and red lines extend. Only in this space can you see the two lights together. In all other places, for instance, *here* and *here* and over *there* you could only see one. (*The witness explained the diagram to the Committee.*)

3199. Now I wanted to ask you this. Do you prefer 4° to the finer angle of, say, 2°?—Yes, I do.

3200. Why?—Because it would never do to leave a space right ahead of the vessel at which only one light would be visible, or none within the distance of two miles, and because I cannot doubt that the observations made at Charlottenburg are correct. It seems to me that any angle smaller than $2\frac{8}{10}$ degrees need not be considered.

3201. Smaller than $2\frac{8}{10}$ degrees?—That is the angle given in the table I submitted as the utmost limit at which a light screened as described would become practically invisible.

3202. Why do you fix upon $2\frac{8}{10}$?—Because, with an angle of 2·8° and with a screen $39\frac{3}{4}$ inches long, the light becomes invisible at such an angle. When the chock gets between the eye of an observer and the light, its power is gradually diminished, till, by turning the screen through $2\frac{8}{10}$ degrees, the light becomes invisible.

3203. Why do you put it *here* (*pointing*)? This is the point at which he would cease to see the outer rays of the light?—Yes.

3204. This is a starboard light?—Yes. From *here* the light would show about *here* full power, and it would gradually diminish from this point to *that*. *Here* it becomes extinct and invisible.

3205. It has crossed the middle line—I do not know exactly what distance it is?—If it has crossed the middle line before the limit of two miles the area in front of this ship must always become more and more similar to that drawing that I gave you, in which I have assumed that the side-lights of a ship are arranged so as not to show across the bow at all. A space so lighted would give rise to the objections which were pointed out by me before.

3206. That dark space would be no great distance, would it?—Do you know exactly how much it would be?—That would be about 2°. It might be about *here* (*describing*).

3207. About *there*?—Yes. But I believe I have explained before that I do not consider the existence of this dark space in itself as a very formidable danger, but more the fact that such a mode of screening makes it impossible to see both lights at the same time.

* *See* Appendix 8, No. 1. † *See* Appendix 8, No. 2.

* *See* Appendix 8, No. 3.

3208. Would you see any objection to the lights being screened 2° instead of 4°?—Why, certainly.

3209. Why?—You would have that space *there* (*pointing*) in which you would see no lights, or, if the ship yaws, only one at a time.

3210. I thought you were good enough to say you did not attach any importance to that blank space?—That space would make it impossible to see the two side-lights at the same time, and I must see them if I want to navigate with safety.

3211. Does it matter if you do not see the two lights at so close a distance?—It would be about a mile and a half off.

3212. Two miles?—About a mile and a half, but wherever it would be, if I do not see the two lights together at the same time when right ahead of a vessel and steering for it I consider that very dangerous indeed, and I insist upon it, that in the interest of safe navigation it is necessary to arrange the screens so that both side-lights are visible right ahead of the ship up to the full distance of two miles.

3213. Then do I understand your view to be that no crossing is admissible that would make any dark space ahead of the vessel?—Yes, that is exactly so.

3214. Then the lights, if that is so, ought to cross at the bow?—They do.

3215. Do they?—Certainly, with the screening here.

3216. Cross at the bow?—Cross at the bow. That is to say, of course, I do not mean to say that they do so at the stem itself. I have left the distance between the two lanterns entirely out of consideration, because that would complicate matters; I mean at the bow *there*, so that these lights should be both visible at, say, about 100 feet from the stem.

3217. That is not at the bow?—Oh, I beg your pardon.

3218. That is exactly what I said, because it comes to this, if you do not insist on the lights crossing at the bow—I mean by the bow, the actual stem of the vessel?—Yes.

3219. Then there must be some space which is described as dark space ahead of the vessel?—Certainly, in every vessel where the side-lights are not placed back to back there must such be a dark space. But I do not consider *this* as a source of danger. If I am within 100 feet of a vessel, it makes little difference whether I see the side-lights or not, at least not if I am in a big steamer going at full speed.

3220. Quite so, that is exactly what I was venturing to point out?—That is so.

3221. Then do I understand you to say that you approve of the Board of Trade Rule which is that lights are to be screened to an angle of 4°, calculated from the outside of the wick?—Oh, no, I have never spoken of the wick, I think the wick had better be left entirely out of the question. What we want to regulate is the light—the flame is the thing. If in such rules as are now under consideration a wick is spoken of that is simply a matter of loose phrasing.

3222. Then I understand you do not approve of the Board of Trade rule which directs 4° of screening, reckoned from the outside of the wick?—Well, I understood the rule of the Board of Trade differently. I believed the rule referred to the light and not to the wick.

3223–4. The flame?—The flame. That is what we had in mind and discussed at the Washington Conference. The wick has nothing to do with this rule.

3225. Now may I put my question to you in this form. Take it from the flame. If you approve of 4°, why do you say that in your view 4° would be preferable to 2° screening from the outside of the flame?—As I have said before, I consider every mode of screening unsafe which does not allow both lights to be seen together right ahead of the vessel up to the full distance of two miles. And I think that Article 15 explicitly requires that these lights must show at that distance, both of them.

3226. So they would, if they crossed at 2°?—They would not, certainly not.

3227. Why not?—This line *here* is $2\frac{1}{10}$ degrees away from the line of reference. Therefore, if the lights only show across the bow 2°, that is not sufficient to make both visible together right ahead at the distance of two miles.

3228. (*Captain Thomson.*) That is where the point comes in again—all the rays were screened off?—In order to make what I say perfectly clear, I will, with the greatest pleasure, bring you another drawing to-morrow, which will prove what I tried to explain; but if you will imagine that in the first drawing* this curve P L is turned two degrees nearer to the line of reference, and the other curve P L the opposite direction, there must result a dark space ahead of the vessel, which must be carefully avoided.

3229. (*Chairman.*) Do you mean if the lights were screened 2° from the outside of the flame that the red and green do not cross at any point?—I beg your pardon; up to *this* distance, perhaps ¾ to a mile and a quarter they would cross, but I cannot tell you now the exact spot where the dark space would begin, on which both lights are invisible right ahead of your vessel.

3230. (*Captain Thomson.*) When you draw that curve are you not assuming that the screening will be the same as in this diagram, the only difference being no degrees instead of 2°?—I would like to point out that the values I give you are minimum values, and that when you introduce a shorter screen the angle will be larger, and consequently *this* space considerably larger too.

3231. Suppose the case in this diagram; you have screened all your rays off?—Yes.

3232. No rays whatever are to be seen?—No rays whatever across the bow.

3233. You understand that would not be the case if you screened from the outside edge of the flame—I suppose you would not give much attention to that?—Well, no.

3234. (*Mr. Scrutton.*) *That* is the point at which the rays cross?—Where the lights cross.

3235. Kindly give a short sketch and follow that out. I want to see where the side-lights will be for you to get this result?—From *here*.

3236. But in order to get *there* you have got the lights behind you. You deal with that by screening in a certain way. I want to see what the position of the lights is?—I would like to explain that the scale not allowing to take into consideration the distance between the two side-lights, I had to mark their positions by one spot, as if they had been placed back to back.

3237. The lights are together?—I have assumed them to be together. If they were 40 feet apart—the drawing is on such a scale as to reduce that distance to a fraction of a millimetre, and if I had not left that out of consideration the consequence would be that this line, say L S, would be brought a little further over *here*, it would, however, remain perfectly parallel to the one drawn.

3238. (*Rear-Admiral Andoe.*) Take it that the line from the inner edge of the flame or the inner edge of the wick to the outer edge of the chock is parallel to the keel, according to the old rule, what would the effect be, if that allows the full stream of the light to go straight ahead without anything standing in its way?—Whenever you put a chock in front of a light that makes a difference.

3239. Why put it in front of the light?—In this case each side-light would show across the bow through an angle of 2·8 degrees, though with gradually diminished force. The old rule left this fact entirely out of consideration.

3240. I remove *that* now and put it *here*, *that* is a line drawn from the inner edge of the wick parallel to the keel according to the old regulations, and that allowed the whole flame of the light parallel with the keel straight ahead of the ship?—I beg your pardon; that would again create that penumbra.

3241. It would cross the bow *here*?—It would certainly cross the bow.

3242. (*Chairman.*) This is a diagram which has been prepared by the Board of Trade, which shows the screening at 2°, at 3°, and at 4°, and it shows the effect of the present rule of the Board of Trade, 4° from the outside of the wick. Now, you will observe that at 2° the line crosses at 716 feet in the case of a vessel of 50 feet beam. Now, if that be so both lights would be seen by any vessel further off than 716 feet?—

* *See* Appendix 8, No. 2.

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The assumption on which this drawing here rests is all wrong.

3243. Will you please tell us why that is so?—You see the prolonged line drawn from the outside of flame to edge of chock is given here as the limit of visibility of the side-lights across the bow. This line is drawn as a straight line up to the distance of two miles, 12,000 feet. It is therefore assumed that the light just inside that limit is powerful enough to be seen at two miles' distance, in other words at its full power. From a point 2·8° away from this line, the light, however, has gradually been diminished in power by the action of the chock, till the power near that limit given by that straight line has become nearly *nil*. In drawing the diagram this fact has been entirely left out of consideration, otherwise the limit would have been made a curve instead of a straight line, as in my diagram. I know what I say may be new to you, and perhaps a little startling, as I have found the same difficulty in making myself fully understood before, but, gentlemen, what I tell you is true. If you will give me time I will show you any day you choose the whole process how these drawings originated—it is a very simple one. Should it not be possible to repeat the experiment here, all that is necessary would be to get a lamp and a photometer—the poorest one will do—and you will see then for yourselves that these drawings are absolutely reliable. Or, if you have no time for that, you might get some scientific person acquainted with photometric measurements to repeat the experiments and report to you. I find it very difficult to make myself better understood at the present moment, but let me try once more: Now, will you kindly (*holding a piece of pasteboard at a right angle to palm of hand*) consider my outstretched arm the screen of a side-light, and let my eye represent the flame of the lamp. If you will kindly close your left eye now you will at first see the whole of my eye, as you would see the whole of the flame. Now I gradually turn my arm till the half of my eye has become invisible to you on account of that pasteboard representing the chock, which now cuts off half of my eye, *i.e.*, half of the light of the lamp. I turn my arm further: now the whole of my eye has become invisible, in other words, all the rays of the light supposed to issue from my eye have been cut off. In a similar manner the power of a side-light is gradually lessened till it becomes nil.

3244. (*Mr. Bolam.*) You find, in fact, there are two things which will cut off light from being seen. One is the screening, and the other is absolute distance?—Certainly; yes.

3245. I think in that diagram no attention is paid to the fact that the intensity of the light varies inversely as the square of the distance?—Exactly.

3246. They assumed that the outer wick rays will penetrate just as far as the powerful rays?—I am very much obliged to you for putting it in that way. That is exactly the mistake that has been made.

3247. The point was brought before us by one witness—a very able surveyor from the Tyne—Mr. Ramsay, I think?—I do not know.

3248. (*Captain Thomson.*) I should like to ask you one question, which I am not quite sure has been put quite clearly, as to the power of the light you would see with 4° screening; whatever the power of the light may be, you see it equally all over within an arc of 4°?—No, I beg your pardon; the Washington Conference meant that the angle should be arranged so that at ½-point none of the rays should remain visible.

3249. That is screening from the outside of the wick. Now, suppose we screened from the inside of the wick for the sake of illustration?—Then you have got the full power of the light ahead.

3250. Then the screening effect according to the law of the square of the distance would not take place if you saw the whole flame?—Certainly not, because you know what the rule is, that the distance at which lights of different power are visible vary in the inverse ratio of the square of their intensity.

3251. Therefore that only applies to what we may call minor rays?—To the minor rays then.

3252. (*Chairman.*) I understood you to prefer 4°, because you think that in the case of 2° the lights would not practically cross one another at any point sufficiently near to the vessel?—No, it is because their limits of visibility would cross before the full distance at which the light should be visible.

3253. Not cross sufficiently near?—Yes. I would like now to point out that the values I give here in my drawing are minimum values, and that the angle measured would undoubtedly have slightly exceeded 2·8 degrees, if the screen had only been 36 inches long instead of 39¾ inches, and if the chock had been made of wood instead of thin sheet iron; but that is not all that has to be considered. The flame used in the side-light might well possess a larger breadth or diameter than the one experimented with, and that too would widen the angle above the limit given. And, again, I would consider it unwise not to leave a certain margin of safety. It is very difficult to fix such a screen so that the cut off is accurate within the limit of ½°. Wooden screens warp, iron ones bend easily. Both may be injured and their position altered by casualties. Again, the lantern may be lost at sea, and may have to be replaced wherever chance offers, and the second lantern may not be identical with the one lost, and they may not have at hand the means or the persons qualified to make the alterations necessary. With all this before me I cannot but consider a margin of 1° only as one that barely provides for the necessities and difficulties inseparable from a ship's life at sea. I therefore come to the conclusion that a smaller angle than 4° cannot be considered in any way a safe one. Besides this, I do not believe that such an angle would be permissible if you consider Article 15 a little more closely, for Article 15 is founded on the supposition that both side-lights should be visible at a distance of two miles if the ships are meeting end on, or nearly so. With the English length of screen of 36 inches only, the angle through which the light gradually diminishes in power cannot be taken at less than 3°, and the angle through which the lights are seen across the bow must be made larger than 3° if you want to comply with Article 15. This is another reason why I would consider it wrong to make the angle in question less than 4°.

3254. (*Rear-Admiral Andoe.*) I want to ask you a question regarding the screening of the side-lights. The old regulation of the Board of Trade was that the inner edge of the wick to the outer edge of the shock should be a line parallel with the keel, is that right?—Yes.

3255–6. I say the wick because it was originally printed wick, but as this is said to be a mistake, we will presume that the inner edge of the lens and the inner edge of the wick are in a line for this purpose. Now I want to know, theoretically considered, if there is nothing whatever in front of the flame or in front of the wick, what objection is there to that rule being continued, so that the whole of the brilliancy of the lamp should show right ahead in a line with the lamp itself allowing the rays from the wick to be sufficient to cross the stem of the ship or rather the path of the ship in advance of the stem?—When that rule was made the lamps used colza or rapeseed oil, and in these old-fashioned lamps the flame of the lamp went up straight and therefore the wick and the flame were about of the same width; therefore it made very little difference whether you spoke of the diameter of the wick or that of the flame. If you will take now a modern petroleum lamp such as you find in most of the ships at the present day you will find that the flame spreads out. If the light could be so fixed that the inner edge of the flame and the outer edge of the chock should be parallel to the line of the keel, the light on the starboard side would show $2\frac{8}{10}$° across the port bow and *vice versâ*, and if you could be sure of having the same lamp, and if you could be sure of having the screen in a perfect position and that it would remain so, I do not see that there could be any great danger if you adopted that mode of screening; but you must not forget that the $2\frac{8}{10}$ degrees that I mentioned were arrived at under somewhat different conditions than those you would meet with in this country. The screen was a little longer than the one you would have here, and the light would shine over to probably 3°. But why do you wish to make that angle less than 4°? To my way of thinking there seems to be very little reason for doing this. I believe I have showed by the diagram I laid before you beyond reasonable doubt that with a lamp and screen such as we used in Charlottenburg the extreme width of the space through which both lights would be visible is not greater than the length of one of our modern steamers, and I am sure that nobody can consider that any real source of danger.

3257. Allow me to ask whether if the old regulations were continued you think that it would increase the risk—that there would be any great risk of collision in consequence of continuing the old regulations?—I do not believe there would be any very great danger if the old regulation of the Board of Trade should remain in force, only the wording of the Rules should then be altered to suit modern conditions.

3258–9. I presume also that you lay stress upon the lantern being of uniform pattern so as to insure the wick always being in the same position as regards the screening?—I am very doubtful about that because I would like to ensure the liberty of making the lamp more perfect—the reflectors more perfect, the power more perfect, and I am very much afraid that if you fixed all these items by regulations the lampmakers would not make any progress.

3260. Could they not accurately fix the position that the wick should hold in the lamp with regard to the screening?—Yes, but, as I explained before, in a well constructed lamp the lens has no influence whatever on the azimuthal direction of the light if the lamp is in focus. I have seen it stated that the whole globe of the lamp would become one luminous mass, whereas in fact it does not.

3261. The wick should be fixed in a definite position in the lamp, should it not?—Of course it is absolutely necessary to see that the flame is in focus.

3262. And therefore, for this reason, should there not be uniformity in lamps? I mean in regard to the lamp itself, putting aside the lens?—I remember that in the old regulation of the Board of Trade there was such a prescription, but I consider it, as I said, of doubtful value.

3263. Doubtful value?—Doubtful value. To illustrate my point let me mention that an institution, not the Board of Trade, issued some years ago rules by which the use of cylinders in lamps, and the use of separate red and green panes of glass for colouring the lights was forbidden. No doubt it acted in what it considered the best interest of navigation, yet you all know, gentlemen, that nowadays petroleum lamps without these two fittings would be considered antiquated. Lamps, wicks, chimneys, reflectors, oils are being improved all the time, and I consider it to be in the best interest of both services that lamp makers should not be tied down by rules unless it is absolutely necessary.

3264. If you at one moment place the wick so many inches from the screen, and then you get another lamp in which the wick occupies a different position that alters the angle at once?—Certainly; that would place the flame out of focus at once, and that would be a most dangerous practice. I have had a lamp in my own hands, which was shown me by a lighthouse official on the other side of the water, as a kind of curiosity. The wick was inches higher than it ought to have been, so that no light from that lamp could be seen by an observer in the same horizontal position as the flame.

3265. There is one point which I should like to ask you; at the Washington Conference, can you tell me whether the merits of fine screening as opposed to a screening of half a point were taken into full consideration, did they argue the point out?—No; there was never a finer point of light discussed than 5°. I have seen it mentioned, I suppose, as a good story, that the Committee one day was discussing an angle of 2½°, but that after having had lunch they doubled the angle and adopted one of 5 degrees. I would like to state here that this story is without the lightest foundation.

3266. You are quite clear that the conference distinctly intended to recommend that each light should be screened to an angle of half a point?—Certainly; most certainly.

3267. (*Mr. Ismay.*) With regard to what Admiral Andoe just asked you, when you arrived at the half point, had you made any experiments?—No, none whatever.

3268. You thought that half a point would be easily remembered by sailors?—Yes, and at the same time I remembered what Sir Charles Hall told us that an angle of 5° would very well agree with the existing English rule which had proved its value in actual practice.

3269. And you regarded with favour the principle of regulating the lights by means of the angle of screening?—Yes.

3270–1. Do you think that the danger of fine screening is greater than the danger of broad screening?—It will all depend of course on the limits. Broad screening over to one point on each side, or to 1¾ points, I would consider dangerous indeed.

3272. In an ordinary ship the rays of the light are visible from the stem-head of the ship when they are screened at 4°?—Yes, but the light there is very weak, and is only caused by the reflection of bright metal in reflecting surfaces besides the reflectors, or imperfections in the glass of the lens.

3273. The same screening might be used for the electric light as for oil lamps?—As far as I know, you would have very little trouble in fixing an incandescent lamp of about 16-candle power, or 32-candle power to a side-light; the diameter of the source of light in this case is much smaller than that of the flame of an ordinary lamp with a wick of 1-inch diameter, and a flame of, say, $1\frac{5}{10}$ of an inch in diameter.

3274. (*Captain Thomson.*) I think you told the Committee that experiments were made with side-lights on board ship, and that the lights were not seen to precisely the screening angle?—Yes.

3275. Can you explain why that happened?—The chock when it gets between the observer's eye and the light cuts off more and more of the flame, so that its power is gradually lessened until none of the rays of the light can reach the observer's eye, and the light thus becomes invisible.

3276. I understand you do not think the lens becomes luminous and reflects light to any great extent?—A very faint gleam of light will be given out by the lens—that is due to the reflection of the setting and the imperfections of the glass. In a perfect lamp without flaw or fault—without any air bubbles in the glass or scratches and which has no other reflecting surfaces than the reflector in the lantern, the lantern cannot give out any light if the flame itself has become invisible by the action of the chock.

3277. I understand you mean that with proper plano-convex annular lenses, such as are used in lighthouses, you only see a vertical line of light?—Yes.

3278. And that should be the case with ships' side lights?—Yes.

3279. But in ships' side-lights the lens does practically become luminous?—Yes, but to so slight an extent that I do not consider it necessary to take it into consideration here, because this light cannot be seen beyond 100 or 200 yards under the most favourable circumstances.

3280. Assuming a powerful light is screened to no degrees from the outside of the flame, do you not think the lens will become luminous an over arc of 3° beyond the screening line?—No; and in order to satisfy you on that point I would like to refer you to the tabular statement* which I have submitted to you. Here we have got the full power of the white light at 60½ units, and after turning the lantern through $2\frac{5}{10}$ degrees, counting from the lines of reference, the light was reduced to $\frac{1}{10}$ of a unit. That was white light; the red light was reduced from $4\frac{3}{10}$ units to $\frac{3}{100}$, and the green from 5·4 units to $\frac{1}{100}$, so that at these points of the original light nothing was left but a very faint glare.

3281. Do you think that the green is as powerful a light as the red light?—That will all depend upon the intensity of colouring. Coloured glasses act on light passing through them in very much the same way as a sieve on other matter; if you take a sieve and put flour in it, with a wide meshed sieve only bran will be kept back. If you take a finer sieve the coarser flour will be kept back too, and at last only the very finest flour will pass. So with coloured glasses; some will retain all red rays, so that only rays can pass that appear to the unaided eye purely green, and others will allow some red rays to pass besides the green. In the first case the power of the light will, of course, be weakened more than in the latter case. Of course, glass may contain besides the colouring matter some other obscuring substances that prevents the rays from passing. Then a further lessening of the intensity of the light takes place. However that may be, in these experiments the green light was stronger than the red.

3282–3. I believe you think that according to the present international rule of the road both lights should

* *See* Appendix 8, No. 1.

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be seen simultaneously?—Yes, if the observer stands right ahead of the ship, or nearly so.

3284. What limits would you give to the expression "end on or nearly end on"?—I think if you would take 4° or 5° that would be about right.

3285. Do you think the screening of the sidelights or the angle through which they would be seen across the bow should correspond with the limits of right ahead or nearly right ahead?—Yes, I should think so, because I think it would not stand to reason to have one law for the night and one law for the day.

3286. At what distance would you have the actual angle correspond with the screening angle—practically at what distance would you think it most important that these two lines should correspond (*pointing on the diagram*)?—They would only correspond just at the beginning—say, up to 150 metres.

3287–8. It would be possible by altering the screening to make the visibility of the light correspond with this line of screening?—If that was done of course the angle *here* would be in excess, but I think that the angle of 4°, which has been proposed by the Board of Trade, is a very good one, and I do not see any reason why that should not be adopted. I think it will meet all practical requirements, and I do not see any reason why it should not be adopted.

3289. You think an angle of 4° makes the lights cross properly?—Yes.

3290. (*Mr. Scrutton.*) Supposing Article 15 to be expunged and a new one had to be written, would you write it in the same way, or do you think it faulty?—I think it would be very difficult to make a better definition of what a ship ought to do under the circumstances this article refers to than the one we possess. There is one point, however, I have already alluded to that might be improved, and that is the phrase "that the masts must be in a line or nearly in a "line."

3291. That is a different affair. I was merely speaking of the night. You think it is as satisfactorily expressed as it could be?—I think it is.

3292. What would you say supposing you were talking with a captain of many years' experience, working up and down the English coast, who says "my desire "always is to see one light as far from my ship "as I can?"—That desire has little to do with the Rules of the Road. The captain's idea apparently is to get away from all kinds of vessels as far as he conveniently can, and I consider him a sensible man. I have seen that principle applied not only in men-of-war but in the Atlantic ships.

3293. Then I understand you to say that you read Article 15, that at two miles off both lights should be seen?—Yes, ahead of the vessel.

3294. Two miles?—Yes, ahead of the vessel.

3295. Two miles?—At two miles both lights must be visible together, and I think every captain would be in a very awkward predicament if at two miles right ahead these two lights would not be visible.

3296. Do you think the two things are reconcilable—that according to Article 15 the two lights are to be seen right ahead, and that when the lights are one point on either bow they are to be deemed as right ahead. Taking that as the interpretation of the law, do you consider the two views can be dealt with, that the two lights are to be seen two miles ahead, and yet the captain says I desire to see simply one light, and that as far off as possible. Do you think these two conditions are reconcilable?—Certainly; what I propose doing, and what I think is absolutely necessary, is that both side-lights of a ship should be visible at two miles by an observer standing right in the line of the keel.

3297. From a point on either bow?—I beg your pardon, I do not say that. If a court should have decided so all I can say is that I, as a sailor, would consider that decision wrong.

3298. (*Mr. Bolam.*) Of course, all of us quite willingly and completely accept your statement that you made no mistake in doubling that quarter of a point, but would you allow me to point out that the statement occurs so often in the English Report that a notion of that sort was not unreasonably entertained?—I never felt very sore about this imputation as I soon found from the report that I really could very well be supposed to have made this mistake. Of course if anyone had read the report more carefully he could easily have seen that at the first reading the delegate from Great Britain recommended the angle of 5 degrees as it agreed best with the existing rule which said that side-lights should be made to cross 5 beams before the bow.

3299. At the very end of the discussion just before the question went to the vote when you had your last word the same statement occurs again. You say, "I would "like to point out that if this amendment proposed "by the learned delegate of Great Britain should be "adopted, it would simply mean that an observer "standing at about 10 lengths of the beam forward "of the ship in the line of the keel could see both of "the lights, and that he could see no light if he stood "on one side or the other. That is the proposition, as "I understand it, which is before us as an amend-"ment." Of course that means 10 half beams?—I think the stenographer in catching my words must have put it in that way; it is the only interpretation I can give. I suppose, too, that I cannot well have said that I would see *no* light if the observer stood on one side or the other of the crossing point. It evidently must read *only one light*.

3300. Then, actually, Sir Charles Hall must father this half point; it must be to Sir Charles Hall that the suggestion about this half point is due?—In that manner; that he mentioned the 5° angle before any other member of the Conference did.

3301. Has he fairly represented what was the English practice?—I felt and feel sure he did. Sir Charles Hall mentioned first the 5 beams' distance and the 5° angle, and I followed it up by proposing the half point angle, because I thought it would be more seaman-like to use these words, and that it would better agree with the existing rule of the Board of Trade.

3302. Now Sir Charles Hall's statement about 5° screening is based upon the Board of Trade's tables?—Yes, as far as I understand.

3303. Which gives certain distances at which lights should cross for ships of 20 feet beam and of 40 feet beam?—Yes.

3304. Have you examined these tables for yourself?—No.

3305. Then will you allow me to point out, that the figures in this table are not consistent with screening of the light 5 degrees but are only consistent with screening the light a quarter of a point from either light?—Sir Charles Hall told us that the regulations of the Board of Trade prescribed that the light should cross 5 beams before the bow: I do not know whether this statement is correct, but I am sure that what I infer from it is correct and that it would give half a point.

3306. If Sir Charles Hall were wrong that would to a certain extent have altered the tone of the discussion, would it not?—Yes, I believe so, because at that time we had nothing else to go by than the rule of the Board of Trade.

3307. Then am I to say that Sir Charles Hall was wrong?—I certainly cannot say that; I can only say what he told us. I have not seen the book. I think that he gave us some more figures, but I see him yet reading from the book, and then telling us that the lights ought to cross 5 beams before the bow according to the British rules. I beg you to understand that it was our wish to follow the safest road we could find, and that in order to do this we thought we could not do better than take up the regulations that were issued by the Board of Trade.

3308. (*Chairman.*) Before this discussion had you talked with Sir Charles Hall and considered with him what agreement or decision should be come to in Washington before this came on at the Conference?—I do not remember anything certain. I had been talking about the case of the screening of the American ship of war and about the Chilian ordinance to several delegates, but I certainly had not talked over with Sir Charles Hall the decision to which the German delegates had come. That I certainly had not done. More I cannot remember, as between that time and the present more than five years have elapsed.

3309. (*Mr. Bolam.*) But we may take it if Sir Charles Hall had suggested a quarter of a point of screening instead of half a point it is probable the Conference would have accepted that as being the British practice?—Certainly we wanted to be safe, and we wanted to adopt something that had been proved to be so in practice.

3310. You accepted Sir Charles Hall's statement about the Board of Trade practice?—Yes, certainly.

3311. In making these experiments that are made here, and of which I think you kindly published a diagram in the Nautical Magazine, you did not give any width of wick that you experimented upon, and therefore one is not quite sure how much of the whole breadth of the wick is being cut off at these various angles from 1° up to 2°·8?—The reason why I did not give it there was because these figures were not given in the official report, and as I thought such a question might be put to me here I have written to the lamp maker, and he has given me the diameter of the wick, and the diameter of the flame of the lantern. I will place it at your disposal as soon as I find it. I think I have got it with me here in London.

3312. Because it is necessary to know how much of the whole wick these angles show cut off?—Certainly; but, of course, what was cut off by the chock was not the wick but the flame.

3313. Then actually what is done in these experiments is this: you show the actual photometrical value of the reduced width of flame, and it shows nothing else?—Nothing else.

3314. Then taking into account the law of the inverse square of distances, you find out how far in distance from a ship the lights as compared with the full light would be really seen?—Assuming that the full light can be seen at a distance of two miles and no more.

3315. And the peculiarity of the experiments is that what the English surveyors call the "field of mingled rays" is a good deal narrower than what they lay down in their diagrams?—Yes, certainly.

3316. So that some of the calculations which have been made from the lamp with a 4° screening are not true?—Certainly.

3317. And we have now, for the first time, a photometrical value of the full light screening?—I believe so.

3318. So that we may take it the whole breadth of visibility of both lights is actually very much narrower than has been very generally assumed?—I am positive it is not above 1¼ cables in width anywhere.

3319. And the experiments lead to that conclusion and to no other?—To no other.

3320. When you have the electric light with the filament fore and aft you have none of the electric light cut off by the screening?—Yes, you would about do that; but you would not in that way get the full power of the light ahead. I want to say here that my experience of incandescent lights in ships' side-lights is not such that I can speak about them with authority. I have had experience, and experimented with incandescent lights in other places, but not in ships' side-lights.

3321. Then we might take it that if you have an incandescent lamp with a film perfectly fore and aft, and we have a 4° screening from the outside, practically the full value of the incandescent lights will be thrown across, but outside the area here?—Yes.

3322. That is to say, the incandescent lamp with the filament perfectly fore and aft and screened to 4° will show not only in these lights' width, but the extended width?—As far as I can see at present that would be the case if the filament never twisted or bent to one side or the other, but in that case you would not get the full power of the light right ahead of the ship where it is most needed, because the forward part of the filament would be in the way of the rays emanating from the rear one.

3323. We have evidence, however, as to one case, where the width is so small it may be neglected?—Exactly.

3324. And in that case we may take it the width of that field would not be reduced?—No; you will see on that diagram how it is.

3325. These electric lights are far more generally in use now?—Yes.

3326. And as time goes on they will be more generally introduced?—Yes, I suppose so.

3327. And we must make up our minds to that wider field?—If you do not make one rule for the ordinary lamp and another for the electric lamp, which easily can be done.

3328. In that case you would give an angle of less than 4° for the electric lights?—Yes, I would then try to assimilate the two, because I think it would be but right that the field which I have said exists in front of any vessel where both lights are visible, should be the same in every case as nearly as possible.

3329. In that case then the instructions to surveyors would not be a hard-and-fast rule to screen everything to 4°, but would be an elastic rule according to the nature of the light?—Yes, that is what ought to be done in such a case.

3330. But would a rule of this sort, the screening from the inner part of the source of light, one degree crossing the bow, do as a universal rule?—As far as I can see now that might be a very good rule.

3331. One degree from the inner side of the source of light is one degree crossing the bow?—Yes.

3332. So that the electric light would throw its light one degree, or perhaps a little more?—I would have to have a little more time given me before I gave a definite answer to that question; it seems to me a good rule, yet I would not like to bind myself without thinking.

3333. At any rate, you condemn a hard-and-fast rule to screen all lights 4° from the outside of the light?—If these rules should be made applicable to all sorts of lights, certainly; but I wish to state from what I have seen that the filament of the incandescent lights so far were not placed parallel to the line of keel, but that they formed a right angle with it, and, of course, in that case it would not make so much difference as in the case you have cited just now.

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## Thursday, May 30th 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Mr. BOLAM.
Captain CASTLE.
Captain HUGHES HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.
Captain THOMSON.

Mr. C. HIPWOOD, *Secretary.*

Captain THOMAS GEORGE KENDALL called and examined.



3334. I believe you are a master mariner, and that for many years you have been commander in the City of Dublin Steam Packet Company's mail steamers going to Ireland?—Yes.

3335. I think you are now in command of the steamship *Ireland*, are you not?—Yes.

3336. In the early part of 1893 you made some experiments, I think, with reference to the screening of side-lights?—Yes.

3337. The results of those experiments have been submitted to the Board of Trade in a letter from Mr. Watson of the 13th April 1893?—Yes.

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3338. What did those observations in your judgment go to show?—Well, they went to show that it was very doubtful about the result of the screening of a side-light at what is called the 4° angle; that is to say, that if you screen a light at an angle of 4° from the outer edge of the wick to the outer edge of the screen, which is the Board of Trade regulation, it went to show that a light could be seen at a considerable distance across the bow beyond 4°.

3339. What result would these observations seem to show as to a 2° angle?—Well, it went to show, of course, that a 2° angle would not be seen so far across the bow as a 4° angle.

3340. In that sense a 2° angle according to these observations is probably to be preferred?—It seemed to me that a 2° angle would answer all the purposes required by the Board of Trade; at the same time I was not prepared to say that a 4° angle was not the correct angle, but it was not so from the results of my own observation; it did not appear to be so at that time.

3341. Since that time I think you have had many opportunities of observing the side-lights of steamers approaching end on?—Yes, I have.

3342. Now, assuming that all side-lights are now screened to 4° what is your present view as to that screening?—My present view is that a 4° angle is not a dangerous angle at sea. I have seen nothing to cause me the least apprehension about any danger on that account, that is at sea, of course. I cannot say anything about narrow waters.

3343. Now that represents some change of opinion since you made your observations in 1893?—Yes, it does.

3344. What is your explanation of such change?—Well the explanation is this, that it is quite evident that the full volume of light is not seen outside of 4° at a little distance; I mean to say if you go a mile and upwards I think what you may call the secondary light from the flame is lost; and if you remember the outer edge of the wick is screened to the outer edge of the screen you cannot get a full volume of light at 4° across the bow because you cannot see the flame. Really and truly the centre of the wick is only showing an angle of about 3°.

3345. So if I follow you right, although in theory the outside rays of an angle of 4° would be seen to cross at a certain distance, in practice that is not so because those outside rays get lost at a certain distance from the ship?—I think that is correct. I think they disappear. I do not think the lens of a ship's side-light is sufficiently powerful to throw the rays of light to a long distance.

3346. I may take it therefore that in your opinion the 4° angle is not a dangerous angle in practice?—I do not think it is a dangerous angle in practice at sea.

3347. At sea, that is confining it carefully?—I do not say that it is right; I still stick to my opinion that a 2° angle would answer the purpose.

3348. I wanted to supplement your last answer by asking you whether you think for practical purposes a 2° angle is sufficient?—I do. I think so.

3349. (*Mr. Ismay.*) Is that for both sea and narrow water purposes?—I cannot say about narrow waters. I have not sufficient experience to give an answer, but my impression is that a 2° angle would answer all purposes both for narrow waters and sea; but I would rather you got that from somebody else.

3350. (*Chairman.*) Your experience is not in narrow waters?—No.

3351. (*Mr. Ismay.*) Would you not call going into Holyhead narrow waters?—I have some small experience, of course, with the railway boats at Holyhead.

3352. In approaching each other?—I have seen no danger there in passing those ships, and watching them coming out; but still that experience cannot be compared to what you get from men navigating a river such as the Mersey.

3353. Or in the Thames and other tide ways?—Yes.

3354. (*Chairman.*) As I understand, your view is that there is no practical danger as regards open waters in having a 4° angle, but that a 2° angle is also practically safe?—Yes, that is my view of it.

3355. I do not know whether you formed any opinion as to the best point with regard to which to screen; the outer edge of the wick or the outer edge of the flame; or the inner edge of the wick or the inner edge of the flame, or the centre?—Well, I think if the outer edge of the wick is screened at a 2° angle (that is my idea of it) that would be sufficient to answer all purposes; then you would really have the light shewing about 1½°, the full volume crossing the bow.

3356. Hardly as much, I think?—Hardly as much, perhaps. It would be really flat against the screen; if you put a wick such as they have now of an inch and 1½ inches diameter flat up against the screen you have a 2° angle, showing it is impossible to make it show really right ahead; it must come across the bow somewhat.

3357. You attach great importance, do you not, to there being uniformity?—Yes, I think that is of very great importance.

3358. Before the last Board of Trade rule came into force, was there, in your judgment, a great variety in the screening of lights?—No, I never observed anything wrong about the screening of side lights or anything unusual. You can only go by the information the Board of Trade have collected about that, and it is quite certain, from the information which they have collected, that it was quite time to make lights uniform.

3359. Perhaps before 1893 your opinion was not particularly formed?—I do not think it was. It is a thing I never thought anything at all about.

3360. Do you think that was the case with the captains navigating steamers—that they did not pay any very particular attention to the exact screening of their vessels or other vessels' lights?—Yes; I think so. I have never heard of any particular notice being taken of the angle at which side lights should be screened.

3361. Before the Board of Trade rule came into force how were your lights screened?—They were screened to very nearly a 4° angle; they required very little alteration.

3362. Which way was the alteration; was the chock cut down or was the chock increased?—I think in my ship they took a little bit off one chock and put it on to the other; it was just as near as could be to the 4° angle—a little too much on one side and a little too little on the other.

3363. Do you know whether the steamers of your company were screened in much the same way?—Yes, I think they would be.

3364. I suppose they would be under the same superintendent, who would look after the whole of them?—Yes.

3365. I think you do not attach any great importance to the difficulty that has been pointed out by some persons with regard to a possible dark lane?—No, I think that exists rather in imagination than otherwise; I do not think it is possible to have a dark lane unless two ships are so close that the lights would not be of much use.

3366. Now, I see you have come to a practical conclusion on the matter, and that is, is it not, that the rule should be left as it was prior to the last Order in Council of January 1893?—Yes, that is my opinion.

3367. (*Rear-Admiral Andoe.*) Are you in command of one of the ships now?—Yes, I am in command of the "Ireland."

3368. The "Ireland," I understand, runs between Holyhead and Dublin?—And Kingstown.

3369. And you pass many steamers immediately in opposite direction to yours?—No, we do not.

3370. Therefore you have not been able, of your own observation, to make mental notes regarding side-lights with reference to ships passing immediately in opposite directions?—Well, yes, we pass two every night; we meet two every night; at least two.

3371. And almost immediately in the same line as yourself?—Very often they are, but not always so; but then, again, I have watched the lights of steamers as we passed ahead of them; steamers coming up and going down the channel; I have watched their side-lights. I have also seen the lights of the London and North-Western Railway Company's steamers, when they have been right astern of us, for a considerable time, and I have watched the side-lights, and the least alteration of helm would seem to shut out one light; it would require very little alteration of screening to shut them out.

3372. Absolutely to shut them out?—Yes; the ship as she worked in the sea from side to side would do so.

3373. At what distance would that be?—Various distances, one, two, three, and four miles.

3374. Absolutely cut off one light?—Yes.

3375. (*Mr. Ismay.*) Where are your lights placed on board the "Ireland"?—The top of the paddle boxes.

3376. And your mast head-light?—The mast head-light is at the fore-masthead.

3377. And your side-lights well abaft the mast-head-light?—They are about amidships.

3378. Well abaft?—Yes, well abaft.

3379. Did you ever go to the stem head of the "Ireland" to try whether you could see the lights?—Yes.

3380. Can you see them?—You can just see the outside of the lens.

3381. Do you not think if they are screened at such a broad angle, they are liable to be misleading to ships approaching?—I saw no light there that would be dangerous at the distance of a mile. Standing on the forecastle head the glare of the side lights can be plainly seen, and from the outside edge of the lenses. There is no light that strikes me of a dangerous character at all.

3382. Did you ever look before 1893 in that position to see your lights?—That I cannot remember.

3383. Of course, your attention had not been called to it?—No, but I should think it would be very much the same.

3384. Do you not think if they were to increase the brilliancy of the light and screen to finer angles that you would get the same satisfactory results?—With a very powerful light, yes; and with a smaller angle?

3385. Yes?—I think you would get more satisfactory reaults.

3386. You think you would get more?—Yes, I think so.

3387. Am I right in thinking you went to Washington?—Yes, I did. I was one of the delegates on that occasion.

3388. We had Captain Mensing before us yesterday, and I rather gather you did not go very thoroughly into the question before you agreed upon the half point?—With regard to the lights?

3389. Yes, you did not make any experiments then?—I think not; there was a Lights Committee.

3390. Were you upon it?—No.

3391. You meet a great many ships coming in and out of Liverpool?—Crossing?

3392. Yes?—Yes.

3393. They are all converging on your track, practically, between the Skerries and the Stack?—Yes, they nearly all pass the Stack.

3394. So that you have great opportunities of seeing lights?—Yes.

3395. In fact, too great?—Sometimes.

3396. (*Captain Thomson.*) How many years have you been in command of these steamers or similar steamers?—Am I bound to answer that question?

3397. Roughly will do for me?—33 years.

3398. It is a long time, evidently. Am I right in supposing that you have made daily voyages during that time in your steamers?—Well, not daily voyages; our practice is to run the night mail for a week. We cross twice every night during that week, and then we run the daily mails for a week, and cross twice each day, and then we have a week off; that is our practice.

3399. Every fortnight you make several voyages backwards and forwards?—Yes.

3400. In all weathers?—Yes, in all weathers.

3401. And you see passing steamers under all possible conditions pretty well?—Yes, we do.

3402. And you see no danger to navigation, or in any way, in the 4° angle of screening?—No, I have not seen anything to cause me to suppose there would be any danger.

3403. But you think at the same time that it would not lead to danger if the screening was a little finer?—That is my idea.

3404. When you made your experiments did you form any conclusion as to why you saw the light at a greater crossing angle than that due to the screening?—Well, the opinion I formed then was that what I saw was the light from the unscreened portion of the lens, and although the full volume of light in the lamp seemed to illuminate the whole lens the light I saw was outside the wick altogether.

3405. It was the light absorbed by the glass?—Yes, and we could see a good light about 6° across the bow.

3406. At what distance, roughly?—I can tell you, I have got it here. I have come armed with a great many papers. (*The witness referred to a diagram.*) It was 650 feet from the light where I made the observation. I could not very well get any further away, and that showed that the light would be full at an angle of 6°—there was a good light 6° across the bow.

3407. How was the light screened?—To the 4° angle.

3408. From the outer edge of the wick?—Yes, it was after the Board of Trade surveyor had surveyed the ship, and had screened the light to the proper angle.

3409. And then your light was visible to 6°?—Yes.

3410. That is an excess of 2°?—Yes.

3411. When you say the light was visible, do you mean the light disappeared?—No, it did not quite disappear then.

3412. It was still visible?—Further across there was what I take to be a good light.

3413. A fair light?—A fair light.

3414. You could have seen it further?—Yes, further than that across the bow.

3415. Were you experimenting with both lights or only one side light?—With both lights; with both the red and green light.

3416. Did you notice very much difference in the power of the two lights—the red and the green light?—No, I did not. I would not at that distance. I do not think I would be likely to do so. I think there is a great deal more in the colour of the lights than is generally supposed. I see many green lights in the Channel which are very much more brilliant than others; there is a vast amount of difference, and there is one particular shade of green, if we could only get it; it gives a splendid light, and there is a good colour as well.

3417. It is quite a question of the thickness and colour of the glass really. You do not think you can say as a rule that the green light is not so bright as the red, or the red light is brighter than the green?—I think not. I think if you get a good green light it is to be seen much further than the red light.

3418. Further than the red light?—Yes, I think so.

3419. Have you considered this question of screening from the point of view of the rule of the road?—Yes.

3420. Supposing you met a steamer at night time shewing both her side-lights to you, and the outer one of those lights was only 5° to starboard or port of your right ahead or the line of your keel projected ahead, what would you do then?—If I saw both her lights 5°?

3421. Both her lights; to be accurate only one of her lights can have a certain bearing, and I give you the outer one of her lights?—That would be her port light.

3422. It would be the port light in one case and her starboard in the other?—If I saw a vessel's three lights half a point on my starboard bow I should port my helm, of course.

3423. You would port your helm?—Yes, certainly.

3424. (*Mr. Thomas Scrutton.*) Half a point, where?—Anywhere, if I saw his three lights; it does not matter where it was.

3425. (*Captain Thomson.*) Did you say half a point?—Yes; it would not matter what the bearing was seeing the vessel's three lights. If I saw the steamer's all three lights right ahead I should naturally port, it would be coming straight towards me.

3426. Would you call a steamer's light 5° or half a point on the bow nearly right ahead?—I should hardly call 5° right ahead.

3427. Perhaps the compass card will help you?—No, thank you; it would depend upon the distance of the ship.

3428. At sea you cannot tell the distance of a ship that you see ahead, can you?—A man must be a queer sort of a seaman if he cannot judge the distance of a ship.

3429. It has been said that you cannot, but masters, I know, say they always can. When you see a light so nearly ahead as that, is it not the fact that the objects nearer to you on board your own ship are apt to come in the way, and that prevents you focussing your eye to an unknown distance. Is there not something in that?—There may be. I cannot remember finding any difficulty in judging the distance of a steamer that is approaching me.

3430. Supposing you see a steamer's three lights 5° on your starboard bow, distant about half a mile, what would you do?—Port my helm, most decidedly.

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3431. You think you would be acting then according to the rule of the road?—Yes.

3432. And you would expect the other ship to port her helm also?—Yes, certainly.

3433. Now the question of screening comes in; you see, if your lights were screened so as to cover an angle of 5° at the distance of half a mile, the other vessel you are meeting would see both your lights as you have seen both hers, and you would both port?—The angle is not 5° but 4°.

3434. I am speaking of 5° which we know would cover that angle, there might be a degree out?—Yes.

3435. Now supposing the lights of both vessels were screened so as only to cover an angle of 2°, as you suggested just now, a finer angle of screening, then you might not see both the other vessel's side-lights, and in that case neither of you would port, although you would be exactly in the same position as you were before?—I presume what you mean is that the two ships are not actually approaching each other on this angle of 5° but are steering parallel courses in opposite directions; is that what you mean?

3436. No, I did not say so?—That is what you are driving at, I think—that is what you want to bring about, that they might port into one another.

3437. When you see the three lights of a steamer, you can in practice tell pretty well how she is coming to you, but the three lights only show that within the limits of their screening?—That is very true.

3438. So that if both your lights are screened to 5° it does not follow the ship is coming an opposite and parallel course. I took the case of a ship approaching you exactly end on, and you said you must port to her two lights?—Yes.

3439. Take that case again; if your lights are not screened 5° to cover that arc the ship approaching you end on, to which you have to port, would only see your green light?—End on. If the two ships were approaching end on, he must see my green light.

3440. But he would not see your red light?—If the two ships are approaching end on?

3441. They are not quite end on you see?—You mean that one ship sees all three lights and the other only sees one light of that ship.

3442. Precisely?—Well, I do not see how that matters; for instance, if I saw all three lights of a steamer approaching half a point on my starboard bow, he would be coming direct towards me, and he probably would only see my starboard bow light; is that what you mean?

3443. Yes?—I should let him see my other light—I should port my helm.

3444. Now, I want to ask your opinion about that matter. In the one case he would port his helm to you according to the rule of the road because he would see both side lights, and in the other case he is not bound to port, only seeing one light, and he might starboard, and that would be very awkward?—Yes; you see he would know perfectly well I should see all his three lights if I was end on to him—he would know that I must see his three lights; and, therefore, as far as I am concerned I am bound to port and show my red light.

3445. The reason you ported to that vessel was because you considered him a vessel approaching you nearly end on, a vessel whose three lights you could see—but you did not consider at the time you gave that answer that he could not see your three lights?—I might suppose—I would suppose—he probably would only see one of my lights.

3446. And yet you would port to him?—Yes, I think so.

3447. That would be your duty to do so?—Yes.

3448. Even although you supposed he would only see your one green light?—Yes.

3449. (*Captain Hallett.*) In the similar case of a vessel 6 points on your starboard bow if the lights were only screened to 2° and carefully screened to 2°, would it not be a greater safeguard that he could not then see your lights and you could not see his two lights—do you see what I mean? Before you could see his two lights he would only be about 2° on your bow. Perhaps you do not follow me. It is put to you this way; a vessel is 5° on your starboard bow and you see his three lights while he only sees two of yours?—Yes.

3450. Very well, you only have to bring them so that he will see both your lights when you come four points?—4°.

3451. Very well; then that would only give you a complete angle of 2° on either side of your bows as a danger angle?—Yes.

3452. Now if you have 4° as they have at present, you cannot tell within 8° how he is going, can you?—Well, you are supposing something I do not quite understand.

3453. I am looking at it in this way; at 4° you cannot be certain of how that vessel is coming; he may be coming dead on you—he may be crossing your bow 4°, or he may be going 4° away from that line?—I see what you mean.

3454. Do you not consider if the screen was cut to 2° it would be a safeguard by reducing that angle by one half?—Certainly, that is quite my idea.

3455. That is one of the reasons why you want it reduced to 2°?—Yes; at the same time I think there is more imagination than anything else about the light being seen 4° across the bow, at a distance of a mile and upwards. I do not think myself that you would be misunderstood by the 4° angle, as far as I can make out, at sea; at the same time, I think the other would be better.

3456. In a vessel like that, 5° on your starboard bow, and with a light screened to 4°, you would only have to alter your course one degree to show him your three lights, would not that be so?—Yes, I think that would be so.

3457. So that he would have all your lights in sight directly you touched your helm?—Yes.

3458. And there would be no doubt about what he did then?—Yes.

3459. (*Captain Castle.*) Going back to the three lights in your starboard bow; she is right ahead or nearly right ahead; on your view of it, it is your duty to get out of the way and port and go to starboard?—Yes.

3460. Now take the other view and say she is not right ahead but she is on your starboard side, it is still your duty to get out of her way?—Yes.

3461. If you get too close to her you stop?—It all depends on the distance.

3462. And the act of porting shows the other ship your red light?—Yes.

3463. And tells her to do the same thing—to port also?—Yes, for ships approaching end on, or nearly end on.

3464. Each ship goes to starboard?—Yes—it is a question how you define "nearly end on." It has been ruled that two points on the bow are end on.

3465. If she is not end on she is on your starboard side it is still your duty to get out of the way?—It is still my duty to get out of the way and I should naturally port.

3466. And the majority of the ships you pass in your trip across to Holyhead from Dublin—you are going at right angles to them?—Very nearly.

3467. So that the screening does not affect you much, but beside meeting your own vessels every night, you meet many other vessels?—Yes.

3468. And then if you see a green light a little on your starboard bow, what do you do if she is approaching you and you see a green light?—We should stand on: we should not make any alteration unless he did.

3469. But if you thought you were going too close?—Well then the probability is I should starboard in time to give him more room before we got too close.

3470. The other ship would probably do the same thing?—Yes.

3471. (*Mr. Bolam.*) You said you would like to leave the Board of Trade rules as regards the screening the lights the same as it was before 1893?—Yes.

3472. What do you consider the Board of Trade rule was before 1893?—That ships' lights should be screened to show from right ahead to two points abaft the beam.

3473. That is the International regulation; but the Board of Trade have to issue instructions to their surveyors in regard to screening for the purpose of practically carrying out these regulations?—What I mean is, the International regulation should be left as it was, and leave the Board of Trade free to screen the lights in a particular way; but this Order in Council has bound them down to a 4° angle.

3474. You would not bind the Board of Trade to a 4° angle if you had your way?—No.

3475. You said that in the case of very excellent lights a finer angle of screening would be very desirable?—Yes.

3476. Even though you left 4° for poorer lights?—I do not think you could have a different angle for different lights?

3477. Have you seen electric lights in steamers very much?—No, not much.

3478. You have not electric lights yourself?—No.

3479. If you have an electric light which could be placed in a lamp it has a very small width right ahead, if you screen that 4°, you practically have all the light 4° across your bow?—You do not get that light weak.

3480. So that 4° would not be a good angle in some cases?—No, I think not.

3481. You think it would be desirable to reduce the angle for that type of light?—Yes.

3482. When you see vessels coming astern of you you have noticed they were showing their red and green lights alternately?—I have noticed that they were cutting off their side-lights very sharp.

3483. Was that owing to their yawing?—Yes.

3484. Were they screened to 4°?—I assume so.

3485. Vessels yaw so that with 4° screening they shut out one light or other alternately?—Yes.

3486. The point made of the 4° is that it would diminish that uncertainty as to what another vessel is doing when she is yawing. You may have the impression that the other vessel has altered her helm when she has not. You have not found that that is the case?—No, that is not what I would say. I would say the very least yawing or the least deviation from the straight line shuts out the light at 4°.

3487. You have been asked a good deal about a light at 5°, or half a point on your bow, and you have been asked to suppose you could see the other vessel's three lights there?—Yes.

3488. That is just a dividing case between a vessel crossing and a vessel passing you?—Yes.

3489. And all difficult cases of that sort could not be eliminated and got rid of, no matter what angle you screened to?—I do not think so.

3490. And all these matters must be dealt with by the intelligence of the officer in charge of the vessel?—Yes; you must give him credit for some little common sense, you know.

3491. (*Mr. Scrutton.*) Is yours an electric light?—No, rock oil.

3492. How far do you consider you see these lights on an ordinarily fair clear night; I do not want an exception either way?—I suppose two or three miles, they are supposed to be visible two miles.

3493. I wanted to know how long, as you said you could judge distances?—We very often see side-lights—I have seen them—four and five miles off.

3494. Without there being any exceptional circumstances?—In exceptionally fine weather.

Captain ANTHONY S. THOMSON called and examined.

*Capt. A. S. Thomson.*

3495. (*Chairman.*) I believe you have made some experiments with side lights?—Yes.

3496. With what object did you make those experiments?—To inform myself to what extent the use of electricity as an illuminant for side lights affects the question of screening; also to ascertain practically up to what angle of crossing the extreme outer rays are visible at a moderately short distance with different illuminants.

3497. Why did you consider it advisable to experiment with electric lights?—Because many merchant vessels and men-of-war use the electric light in their side lights, and I considered that this practice would become more general in future.

3498. Why did you attach importance to the crossing angle of the outer rays at moderately short distances?—In reply allow me to refer to the table* in Sir Digby Murray's evidence showing the distance apart at which meeting ships would pass after sighting both each other's side-lights at a quarter and a half mile distance at an angle of 4°. It struck me that these conditions might possibly be present with an angle of screening less than 4°, and I wished to ascertain practically what angle of screening would satisfy the conditions. With electric lamps in a good lantern I find the conditions given in this table are fulfilled with an angle of screening of 0° from the inside, or of 1° from the outside of the filament. Besides, I consider moderately short distances in the case of ships meeting to be the critical ones, when the officer of the watch has no time to note the change of bearing of the light he sees, and has to act immediately in accordance with the Regulations for Preventing Collisions at Sea, though he may only see a glimmer of the second light.

3499. Do you produce any results which appear to you to prove this?—Yes, I hand in a list† of some of the experiments which show this clearly.

3500. At what distances have you experimented?—572 yards.

3501. Why that precise distance?—Because it is the distance from the building in the works of the Silvertown Telegraph Company where the lights are exhibited to the dockyard wall on the opposite side of the river.

3502. How was this distance measured?—By triangulation.

3503. What lanterns have you used?—Three kinds: "Harvie" full sized dioptric, a pair of fish globe lanterns (maker's name unknown), and a third pair smaller and cheaper with dioptric lenses.

3504. How were the lanterns placed during the experiments?—The screens were first placed on a carefully levelled table, and after being pointed in the required direction, secured to the framework. The lanterns were then placed in position and cleated with their inner sides parallel to the screen. The screens were parallel to each other about four feet apart.

3505. How were the lamps sighted and screened to the required angles?—Two white marks corresponding to the projected lines of the screens were set up on the opposite side of the river, allowance being made for the half width of the lanterns. These marks were called the "reference marks," and the lines from the centre of the lanterns to these marks, the "reference lines." On either side of the reference marks, other marks were made indicating the extremities of the tangents for 1, 2, 3, and 4 degrees. Each lantern was sighted independently on its reference mark by means of two plummet threads, one of which passed down through the funnel of the lantern, and the other suspended a short distance beyond the end of the screen, its bob being immersed in oil. The inner plummet remained in one position over the centre of the lantern whilst the other one was moved as required for sighting. A thin metal slide with vertical outer edge, working through the screen at right angles, was moved in or out, so as to bring its edge exactly in a line with the two threads. When this was done the position of the slide was read off on a fixed millimetre scale by means of a small pointer on the slide. The number of millimetres so obtained was called the reference number, and by adding or subtracting a number of millimetres corresponding to the width of the wick or filament, and the length of the tangent at the slide, the screening could be rapidly changed to any required angle from inside, outside, or centre of the source of light.

3506. What illuminants were used?—The details of the illuminants, filaments, and wicks used, are stated on the first page of the list of experiments handed in. They include electric lamps of 32, 16, and 8 candle power, and I may say of 50 candle power and 100 candle power, also colza, and mineral oil burners and wicks.

3507. Can you give a general statement of the results you obtained?—As yet I can only say that with 32 candle-power electric lamp in Harvie lanterns the extreme outer rays at 575 yards are visible to 3½ degrees beyond the angle of screening from the outer edge of the filament with both colours, that this crossing angle decreases with diminished power of light being 2° with colza and 8 candle power electric light, and somewhat less than 2° with an ordinary fish globe lamp burning mineral oil. Also that the green light, though apparently much less intense than the red with equal power is more persistent than the red and is seen to as great a crossing angle. I may add that since that was written I have made other experiments, and I have found that with very powerful lights such as 100 candle-power this crossing angle at this distance goes up to 5°.

3508. How do you account for this crossing of the light?—I believe it is simply due to the luminosity of the

* *See* Appendix 2. No. 4.
† *See* Appendix 10.

*Capt. A. S. Thompson.*
30 May 1895.

lens, the excess crossing angle being equal to the angle subtended at the chock by the arc of the lens which is sufficiently bright to be visible at the given distance.

3509. You are of opinion, are you not, that at long distances this excess light will altogether disappear?—That follows, if my explanation of the cause is the correct one.

3510. Have you any practical suggestion to make from the experience you have obtained?—Yes, I find that when it is a question of comparing the crossing angles of the red and green, it is best to experiment with one lantern only, changing only the coloured screen. This forms, I believe, the best practical test of the relative power of the two coloured lights at a given distance.

3511. I think there is another matter of a rather different kind. I think you ascertained the exact angles of screening of vessels belonging to your company which had not been altered for a considerable time?—Yes.

3512. I think you have drawn out a table in reference to the "Silvertown," which has not been altered since 1889; the "Buccaneer," which has not been altered since she was built in 1885; and the "International," which has been laid up for several years, since 1887 or since about 1887?—Yes.

3513. And thus you see what was the actual angle of screening adopted in each of those vessels at those times?—I should like to correct one of those dates. The "Silvertown" screening was written from memory, and I have not been able to verify the date quite positively. I was not able to say which voyage I did it on, although it was before 1890. I am not sure which voyage I did it.

3514. However, it was before the new rules?—Yes, none of these screens have since been surveyed by the Board of Trade surveyor; they have not been altered in any way.

3515. (*Rear-Admiral Andoe.*) Not inspected?—As a matter of fact they have not been inspected.

3516. (*Chairman.*) I may say that the highest goes up to 5° 20′, and the lowest is 2° 41′—they vary between these?—I should like to say that in the case of the "Silvertown" I screened the lights myself according to what I considered the International Regulations required—that is parallel with the keel from the inside of the lens, without taking the position of the wick into account. It is curious that they should come out just 4°. I believe it has been the custom at sea generally to do that.

3517. Screening from the inside of the lens gives you 4° to the outside of the wick?—With a good lantern it does—it used to do so, but I may mention that the "Silvetown's" screens were longer than 3 feet.

3518. (*Rear-Admiral Andoe.*) Because you get the rays from the lens as well?—Yes.

3519. The wick does not give 4° but the light crosses at 4° notwithstanding that it is parallel with the keel?—That is another matter, I am now merely speaking of the screening.

3520. (*Mr. Bolam.*) The general outcome of your experiments was that an electric light will throw far more light across the other bow, that is, more is due to the angle of screening of the filament?—At moderate distance.

3521. And these distances you call moderate, are still outside what we might call the collision range?—Yes.

3522. And that would point to the observation that screening the electric light should be finer than lights of a weaker kind?—If the screening at short or moderate distances is supposed to be important.

3523. (*Captain Castle.*) What do you call the collision range?—Well I think myself that ships in narrow waters where no doubt the finer screening—where there is most occasion for finer screening—I should think that collision range might be as little as 200 yards?

3524. At sea?—At sea, I should say a quarter of a mile.

3525. (*Mr. Bolam.*) What is the distance at which you experimented for these excessively large angles—is it over and above that distanoe?—More than that—600 yards.

## Wednesday, 19th June 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Sir EDWARD HARLAND.
Captain HALLETT.
Mr. ISMAY.
Mr. SCRUTTON.

Mr. C. HIPWOOD, *Secretary.*

Mr. WILLIAM HARVIE called and examined.

*Mr. W. Harvie.*
19 June 1895.

3526. (*Chairman.*) I think you are a manufacturer of ships' lamps, and carry on business at 222 Broomielaw, Glasgow?—Yes.

3527. In your view, the essential requirement in ships' side lights is visibility, is it not?—Yes.

3528. The greater difficulty as regards that point has been felt, has it not, in connexion with the green light?—Yes, I have a report here of evidence given over 20 years ago by Mr. Gray when he was getting up the trials that took place at Shoeburyness at the time. It is a preliminary report, and this is the statement he made out previous to the trials.*

3529. I see what Mr. Gray says is that "there is not "much difficulty with the colourless masthead light; "and as regards the red side lights, experiments "recently made over measured ranges at Shoebury- "ness lead to the conclusion that a roomy lanthorn of "the usual pattern, when fitted with a proper burner "or burners, and with reflectors and plano-convex or "dioptric lenses, will, on a dark night, with a clear "atmosphere, throw a light for a distance of two miles. "The green light presents the greatest difficulty, and "it appears that no ship's lanthorn yet tried at Shoe- "buryness has been found capable of throwing a green "side light two miles over an arc of ten points of the "compass. An efficient lanthorn for the starboard "side lights has, therefore, yet to be submitted"?—Yes, that refers to the trials that had taken place before that date—trials that took place in previous times.

3530. I understand that since the introduction of light towers about 20 years ago you have personally fitted a large number of lights and screens on board many vessels, both at home and abroad?—Yes, that is so.

3531. And have you fitted them upon some of the largest steamers afloat?—Yes.

3532. Were they fitted in accordance with the Regulations and Orders in Council in force at the time?—Yes.

3533. Of course we know that before the present 4° rule there was an earlier regulation which laid down the screening in a different way?—Yes, that is so. This is the old regulation. It pointed out that

* Notice to Lamp and Lanthorn Makers, printed on p. 5 of H.C. 184, of 1873.

the light was to be visible for two miles from right ahead to two points abaft the beam.

3534. Your lamps were fitted with a view to their complying with the regulations?—Exactly.

3535. In complying with those previous regulations it was necessary to have the flame of the burner so placed as to show a full power ahead?—Exactly.

3536. What angle over the bow would be necessary in order to obtain that full power ahead?—I calculate, as nearly as possible about 2°, but there was a drawing I sent to the Board of Trade while that matter of the crossing the bow was under discussion. They asked me to show them in what manner I was in the habit of fitting the screens, and they said (I think it was Sir Digby Murray made the remark) that what I had shown gave 2½°, but I could not say exactly, because I have lost that drawing and I cannot refer to it. But it certainly did not exceed 2½°. I think it is rather 2°.

3537-8. And your view about this 2°, or whatever the exact measurement may be, is that that is ample for safe navigation?—I think so.

3539. When you say 2°, do you mean 2° from the outer edge of the wick?—Well, it shows an angle to the keel of the ship of 2°.

3540. But does that mean that the whole of the light makes the angle?—I think it refers only to the outer edge of the wick where that angle is measured from. We were not formerly in the habit of measuring the outer edge of the wick in any way, we always worked from the focus; it is a new idea altogether this measuring from the outer edge of the wick.

3541. I believe you have made yourself acquainted, have you not, with the report and recommendations made by Sir Murray Digby and Mr. Samson in 1891?—Yes.

3542. In your view the experiments upon which that report was based were not very complete?—No, they were not sufficient.

3543. You think that the power of the lights used in those experiments should have been stated?—Yes.

3544. And that the trials should have been with other lights and of a more general kind?—Yes, they should be repeated by other sets of observers. I may mention the navy. I have had a considerable connexion with them in supplying their lights for the last 10 years and over; they have the most elaborate reports, and are not satisfied with one set of observers, but they will hand the same thing over to two or three different persons, and after that they are put through a test at sea; they do not from a mere glance or look at the light condemn everything else and begin anew; they have a lot of different reports to make sure of the ground they are going upon.

3545. Could you tell us how the information is obtained which is contained in these reports?—I presume if you applied to the navy they would furnish you with those reports.

3546. Who makes the experiments for the purpose of determining upon the matter?—Well, the principal part of the experiments have been for the last, I should suppose, five years made under the captain of the steam reserve at Chatham; previous to that there were experiments in Portsmouth, as far back as 1879. Admiral Carpenter was chairman of the committee, and there have been others besides since that time. I do not know all the different experiments that were made, but I know there were a great many. I hold here a programme dated December 1885; I was invited to go down to see the experiments at Portsmouth; but this is only one of a great number that took place.

3547. I observe this is dated the 19th of October 1885, and it is a programme of comparative tests to be made with bow lights fitted to burn oil and others fitted to take electric lights?—Yes. There are so very many varying conditions that it is quite impossible to arrive at a decided realut from one experiment—the thing ought to be repeated over and over again. There is the trim of the lamp, and the state of the atmosphere, and a great many other things which have to be considered.

3548. You think the experiments upon which the 2° was arrived at were not sufficient to justify an alteration of this kind?—They were certainly not; there is not a vestige of argument to show that the alteration was necessary.

3549. (*Captain Hallett.*) Does the witness refer to change from more degrees than 4° to 4°, or from less degrees than 4° to 4°?—I refer to the change from the original regulations.

3550. (*Chairman.*) From the original regulations to the new regulations?—Yes, there were no 4° previously to that.

3551. Practically, what did you regard as the meaning of those old regulations—what screening did they practically give?—That is what I have stated here; you have to produce a light to show two miles ahead from right ahead to two points abaft the beam; my attention was directed to carrying that out, and we did carry it out.

3552. That is what I understood you told me just now, and that it meant about 2° or perhaps somewhat more?—Quite so.

3553. So that you had regarded an angle of about 2° as screening which was in accordance with the regulations then in force?—Yes. When the rule first came out it did not strike me at the time that it was to create such an amount of trouble and difficulty. I thought that it merely referred to a little alteration upon the chock of the screen-board—a little taken off; but instead of that they have mixed it up and caused the wick to be placed in a particular position and caused us to alter the lamps that have gone on for years without anything being the matter with them.

3554. That is the next point I wish particularly to call your attention to, apart from the 4°. As I understand you the present regulations refer to the placing of the wick at some particular angle to the keel?—Yes.

3555. What is the exact regulation about that; do you happen to have it by you?—I have it. The wick is to be at right angles to the keel. I have frequently, when the surveyors were in my place, pointed out that the edge of the wick is not a proper place to measure from, because the flame projects beyond that about a quarter of an inch. Now, if it is to be taken in that way, by the side of the wick, they are giving you 4½° and not 4°. I have a little model here by which I can illustrate it and show that with this extra width of flame, there are slight diffractions which also take place; it may increase it a little bit, this extra flame increases ½° or thereabouts.

3556. When you spoke just now of 2° or 2½°, did you mean 2½° or 2° from the outside edge of the wick, or did you mean 2½° or 2° from the outside edge of the flame? What screening had you regarded as complying with the previous regulations?—These angles refer to the line of the ship, and it does not matter if it is 2° or 2½° which point of the wick you measure from, the main thing is that the angle with the line of the keel is 2½°.

3557. I wanted to know what your view was as to the kind of screening that would satisfy the old regulation, that is to say the regulation which preceded this 4° rule?—The smaller one in this plan would give a greater angle than we were in the habit of giving; the line of the larger wick would be the plan upon which we have formerly fitted our lamps.

3558. What angle does that give, screening from the outside of the wick?—Well, the reply I got from the Board of Trade was that the angle that my drawing showed was 2½° from the outside of the wick. I have a drawing here (*produced*). *This* is the edge *here*, and *here* you see the light falling on the lens and passing through it; the whole flame comes to *this*; this angle over the bow they said was 2½°. I was under the impression that it was rather less.

3559. I rather gather that the effect of that was to screen practically the inside edge of the wick. Do you represent that was what it meant; that it would be screened by the inner edge of the lens cutting the inner edge of the wick?—Yes.

3560. And the chock in the same way?—Yes.

3561. So that would be equivalent to what we call screening to the inner edge of the wick?—Yes.

3562. (*Mr. Ismay.*) In other words, parallel with the keel?—Yes, in other words you must not intercept any of the light from the lens, otherwise you reduce the power of the lamp.

3563. (*Chairman.*) Do you make any allowance for the inside of the flame, because we have spoken here of the inner edge of the wick. If you speak of the flame

*Mr. W. Harvie.*

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you must allow something beyond it, because screening to the inner edge of the wick is not quite the same thing as screening to the inner edge of the flame?—No, hardly; that was an extra long wick, an inch and three-quarters.

3564. (*Mr. Ismay.*) Would Mr. Harvie tell us what was the position of the wick there; what angle?—This wick here was at the same angle; the Board of Trade will not allow us to alter it, and these burners are fixed rigid with the apparatus for winding the wicks, but we have sometimes to vary them in certain positions according to the fittings of the ship; we have to make the doors on *this* side, and the lamp instead of going in *here* goes into *there*. I had some difficulty in a recent case of a Dublin steamer built in Port Glasgow; the surveyors objected to pass the light put in that way, because it was a little different; but I saw Mr. Herriot, and I made it right so as not to have any further trouble.

3565. (*Chairman.*) Let me be quite sure that I have got it clear that before the new regulations you would have considered a lamp to be screened satisfactorily which had the inner edge of the lens, the outer edge of the chock, and the inner edge of the wick in a line?—Exactly, the whole width of the flame was outside and that made the angle over the bow.

3566. (*Mr. Bolam.*) And nothing else but the breadth of the wick?—Nothing else. I may mention that in consequence of this alteration to 4°, I have increased the length of the lens.

3567. (*Rear-Admiral Andoe.*) There would be no objection, you consider, to the inner edge of the wick, the inner edge of the lens, and the outer edge of the chock being in a line; that would be satisfactory screening?—Yes.

3568. There would be no objection to that lens, if necessary, being brought round as far as *here*?—Oh, no.

3569. Therefore, you would have the inner edge of the wick and the outer edge of the chock passing through the lens, and that would not affect the light?—It would not. When we required this extra 4° we made a longer lens, and we are making them all the same way now.

3570. (*Sir E. Harland.*) In other words, you are obliged to make your lens so much longer in order to embrace the 4°?—Yes, a little longer.

3571. That is more than a third of a circle?—Yes, 116½° plus the fittings.

3572. (*Chairman.*) You told us that the present rule really requires more than 4°, because you have to allow for the extra width of the flame?—Yes, that is exactly what I can show by the model that I have here. The lamp is half size, and the screen is 18 inches long, and, measuring from the outer edge of the wick to the outer edge of the screen, the space is 1¼ inches. The first line upon the screen shown represents the 4° angle; the second line, with the sliding bar extended nine inches, marks the point where the ray should stop for the 4° angle, but owing to the extra width of flame the ray reaches the third line, being over half a degree more. This can be demonstrated with the lamp alight in a dark room.

3573. What causes the extra amount?—The extra width of the flame. This extra width of the flame causes the ray to come to the third line on the model.

3574-6. (*Mr. Ismay.*) The middle one?—No, from the second to the third line. The flame spreads out, and you cannot prevent it spreading.

3577. (*Chairman.*) I think in your view this alteration from 2° or 2½°—whatever it was—to the 4° was unnecessary?—I think it was quite unnecessary, and more especially since it is coupled with this arrangement of placing the wick.

3578. Would you kindly explain that to the Committee? As I understand, you think that placing the wick at a particular angle is unnecessary?—Here is a diagram which I have made to show this. This, for instance, represents the test of this light—the small one. When the wick is placed at right angles to the keel the figures of the measurements are given in black. When we change it and place the wick parallel to the keel the figures are given in red; you will see there is so very little difference that it is hardly worth while to bother about it, and take all this trouble.

3579. (*Rear-Admiral Andoe.*) What do the figures represent?—We have a photometer bar, with a standard lamp at the one end, and we light the lamp which is being tested at the other; and these figures represent the distance from the lens to the photometer.

3580. (*Mr. Bolam.*) In inches?—Yes.

3581. They give the photometric distance in inches?—Yes.

3582. (*Rear-Admiral Andoe.*) That is, whether the wick is set at right angles or end on it is practically the same?—It is practically the same. The difference in power is shown there. If you take the point where the light is strongest the figures are 46 in one case and 45 in the other. The difference is not great.

3583. As regards volume?—As regards power.

3584. As regards penetrating power?—Yes.

3585. And as regards volume?—It has nothing to do with it. It is the power given on the photometric disc.

3586. (*Mr. Bolam.*) That is to say, the larger numbers there represent the stronger value of the light?—Yes.

3587. With these is there some more light *here* at 46 than *here* at 42?—Yes. You see it may be explained to a certain extent why some of the difference exists by the fact that the reflector in certain positions has greater power. Here is another drawing of a full-size lamp with a duplex burner. In this case also the two sets of figures, the black and the red, are pretty uniform; but in the centre, where the reflector has more power, the light seems to be a little stronger, and the figures are 72, 73, and 74.

3588. (*Chairman.*) That is just about, I suppose, the focus of the reflector?—The focus has more power.

3589. (*Captain Hallett.*) What does 46 and 47 represent?—Inches.

3590. Have you used a standard candle?—No, a standard lamp.

3591. What lamp have you used?—Just an ordinary paraffin lamp; the lamps are just the same as we burn in these. The lamp, perhaps, gives 10 or 12 candles. It would not have been a very good experiment only to have had one candle power.

3592. You would have had too great a distance?—Yes, of course it would have been a simple matter for me to test the lamp in that way, and then give it with candle-power.

3593. You got a lamp as nearly as possible the power of these lamps?—Yes; then I measured with the wick parallel to the keel, and again with the wick at right angles to the keel. You will see from the drawing that the single wick does not give quite such good results as the double wick, but it is sufficient for all practical purposes.

3594. (*Chairman.*) So that you do not regard this order to put the light at a particular angle as a necessary order?—I think it is a very nonsensical order.

3595. (*Rear-Admiral Andoe.*) What is the best place to put it in?—If you are going to make any measurement I would make it from the focus.

3596. (*Chairman.*) Supposing you wanted to draw up regulations for the screening of ship's lights, from what point would you take the screening; from the outer edge of the wick, the outer edge of the flame, the centre of the wick, or the inner edge of the flame?—I think I would measure it from the focus.

3597. The centre of the wick?—Yes, I think so.

3598. Of course, screening from the inside of the wick has the addition of simplicity?—Yes, no doubt it has. We were always accustomed to have the screen boards alongside the lens, similar to what I have there.

3599. That was a very simple mode of doing it. Everybody understands screening to the inner edge of the wick?—Yes.

3600. It is a simpler way than calculating the number of degrees?—Yes, quite so; and if a very narrow wick was placed in the lamp, it would require to be put further into the lantern so as to get the proper number of degrees.

3601. There is something here about a special case. I do not know if you desire to mention that?—That is a case which has occurred since these measurements began to be taken from the outer edge of the wick. They do the same with a filament in an electric lamp, and the result is they do not get a proper width with, say, a 32-candle lamp, and they go to a 50-candle lamp for the purpose of having it wider. And in the case of a ship we were fitting out in Dundee the men had to

take out the 32-candle lamps and put in 50. That was done without any intimation to myself. I did not know about it at all. I consider they had no right to do anything of the sort. If I had known before, I would not have made that alteration for them, because they first cause a very dark green glass to be used and then they insist upon this larger flame.

3602. You were speaking of screening the electric lights. Have you made lamps for the purpose of receiving electric lights?—Yes, we supply them regularly.

3603. From what point do they screen the electric light, from the outside of the filament?—Well, it appears to be so. I was not aware of it until this case cropped up about the rejection in Dundee. But I presume they were screened in the same way as the oil lights, because in the event of the failure of the electric lights the oil lamps must be put in their place.

3604. How should you apply the rule of screening to the inner edge or the middle of the wick, with regard to the electric light?—I would do it in the same way. I would take either the edge or the centre, whichever it might be.

3605. That, you think, would produce satisfactory results?—Yes, I do.

3606. Do you think screening to the inner edge of the filament of the electric light would produce substantially the same sort of result as screening to the inner edge of a wick?—Yes; but the Committee should first state the distance at which they wish the three lights to be seen by an observer on another vessel, so that one eye can see the whole three at once. Then, after that was arrived at, it would be a simple matter to apply the screening in the smaller incandescent lamps; the width of the filament might not be sufficient because it is narrower than in some of the oil wicks. In that case, if you were to simply take the inner edge you would have a slightly different angle than what you would have if it was a broad-wicked lamp, so that in that case to take your angle from the focus would be the most scientific and correct way—that is my idea.

3607. And you think that a rule which required the angle to be taken from the centre would be equally applicable to the electric light and to the oil lamp?—Oh yes, no doubt it would apply.

3608. Would it be possible, do you think, to lay down a rule which would be equally applicable to electric lights and to oil lamps both?—I think so.

3609. If, for example, you were to say that the angle should be so many degrees calculated from the centre either of the wick or of the filament, would it in your judgment be a rule which would cover both cases?—I think so.

3610. I think that you wish to draw attention to the appearance of the diagram No. 3 in the Report?—Yes.

3611. Will you be kind enough to give us your view about that?—That is more a matter of fixture and fitting the sidelights and screens, and I maintain that that should have no place in official documents; it is not an article which has been, what you may term, tested at sea to any great extent.

3612. That is a diagram, as I understand it, which shows the sidelights hung so as to swing?—Yes, they are on screens which are placed on gimbals. I have fitted lights with them many years ago, but it is not a plan which is generally applicable. I do not want to find fault with the man who has introduced this plan of screening, but I object to it being placed so prominently in official documents; it ought first to have undergone some kind of test. I referred a little while ago to the practice in the navy. After all these reports have been obtained from the different parties reporting to the Admiralty, then the lights are sent out for sea trials for 12 months, and not to one ship only, but to various ships, before they decide upon a new plan; but here the thing is adopted without anything of that sort.

3613. In your opinion there is not sufficient experience to justify that as an official order?—Certainly not.

3614. What is this 40° requirement?—This refers to the vertical divergent rays. The lens is for the purpose of intercepting the divergent rays which go up to the sky and down into the water, and it projects these rays in a horizontal direction. It is necessary for the safety of navigation, on account of the movements of the vessel, that these rays should be sent forward with a divergence of 10° upwards and 10° downwards or thereabout. It was found by experiments in the navy that an oil lamp is not suitable for a permanent list of 20°, as the oil either runs out of the lamp or drowns out the flame, but I do not think the whole of the lamps should be injured for the sake of an odd case such as I have mentioned. I think it is very rarely that a vessel has a permanent list of 20°, and to give 20° divergence the power of the lights is reduced.

3615. (*Rear-Admiral Andoe.*) Do you supply the lights principally for the navy?—Yes, I have done so for many years.

3616. Are they the best lamps that you produce?—The lamps that I supply to the navy?

3617. Yes?—They are not the largest size. They are as good as we can make. I believe I have some photos here. In fact the lamps I supply to the navy would not be passed by the surveyors, but the Admiralty hall-marked the sizes of my lamps, and they adopted the second size, as they considered it sufficient in power for their requirements.

3618. But they are, as a matter of fact, not as powerful as some lights carried by some of the merchant ships?—Oh, no, the principal objection that they had to them was the room they took up. I was cramped in my original pattern to make them suit the places they had previously used—the recesses.

3619. Are they all passed before they are accepted in the navy?—They undergo a thorough examination.

3620. Are they sometimes rejected?—If there is any defect they are. They are tested in this way. After having the photometric test and the other examinations, then they are trimmed and put through what is called the endurance test, and the wick is turned up, I forget for how many hours, perhaps five or six hours. If the glass flies under that test then the thing comes back to me, and that is the only thing that I have ever had the matter with my lamps.

3621. Have you ever found a difficulty in coming up to the standard of the colour of the green glass?—No, I brought this bottle of coloured fluid to show what we have to fall back upon. If the patterns get lost we need only make a saturated solution of sulphate of copper, and all we consider then is the degree of depth. If you look at that, end on, you will find that that will be pretty nearly the depth of colour required. This is a blue tint, but when I apply a yellow light to it (*lighting a match*) you see how the green is brought out.

3622. Therefore, a blue-green is considered the best colour?—I consider it the only colour; we call it "signal" green. Regarding the trouble we take when I order green, I have to get it specially made for myself, and to take an extra large quantity—in some cases as much as will last me for five or six years. Then before that was done with we would begin to look out for another lot, and it must be made to my tint, and I am to be the judge of it. You will find if you are looking at these two samples, that they are as near alike as possible. The bottle is a little darker colour than the glass when you look through the end.

3623. Besides the endurance tests, are the Admiralty lamps tested for penetration?—Yes, we have the photometric bar and if they do not come up to that, they are rejected altogether.

3624. Are the lamps supplied to the mercantile marine tested in anything like the same manner?—No.

3625. Not by the surveyors, or by anybody?—No, the surveyors' test is no test at all. Here is a case which took place some years ago. I was asked to go to Queenstown; it was about a matter of a collision, and I was wanted to make an examination of the lights, and upon receipt of a telegram I made my way on board. This case illustrates what I have said in a paper here: "Surveyors and the officials "ought to be fully instructed in the technical con- "struction of good ships' lights, and the instructions "should be clear and decided to enable them to make "an intelligent inspection of the lights, and not be "limited, as at the present time, to certain external "dimensions of non-essential parts." In these lights that I went to inspect I found the lens was of the prismatic form, but instead of the prism being formed to refract the rays of the light, they were made so as to reflect them back into the lamps. This is something like the form I found there (*producing a drawing*). The outer angle is something like a right angle; the

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ray from the focus to one face of the prism is reflected to the other face and sent back into the lantern. Not a ray would go outside. You would know it was lit, but there was nothing you could see at a distance these lenses should not have been passed.

3626. You have had opportunities of judging; are you of opinion that the majority of the smaller class of steamers, such as what we call ocean tramps, are fitted with proper and serviceable bow-lights?—Well, you know, that that is rather a delicate question for me. I have always gone upon the plan of advocating my own wares, and I do not think it would be right for me to run down any other maker.

3627. Speaking of your own lamps, can you say—of course, you are limited to price very often—that you are able, for the price which is paid you, to supply proper serviceable lamps for that class of vessel?—Yes, I do it to many.

3628. At about what price?—I think the lowest would come out from 8*l.* to 10*l.* the set of three.

3629. Could you not supply serviceable lamps much cheaper than that?—No, the masthead light is a little more than the side light. I reckon the side light used to be made for about 3*l.* 10*s.*; I am speaking of copper lamps.

3630. (*Chairman.*) Is it necessary that they should be of copper; is not that a considerable expense?—Well, that adds to the expense, but they gain in durability. The salt water rusts iron very rapidly. In talking about the quality of the lights in the merchant service, I may mention that I have a strong conviction that you will never have proper lights in the merchant service until you have intelligent surveyors to look after them.

3631. (*Rear-Admiral Andoe.*) And do you consider that every lamp before it is accepted on board a ship for use ought to be inspected by a surveyor?—I do; and he ought to have a knowledge of what he is looking at, and should not require any machinery to know that he was right. There are a great many things, sir, that I have pointed out for years; they are gradually having them introduced here now. For instance, that 4° angle must be complied with no matter what trouble there is. Paragraph 10 refers to lenses which are coloured throughout—I have such a lens here to show the Committee. The paragraph says:—"The surveyor "should discourage the use of these lenses." I say that he ought to reject them.

3632. (*Captain Hallett.*) Which lens?—The solid lenses, because they are always defective.

3633. (*Rear-Admiral Andoe.*) It is what they call a fish globe lens?—*This* is the part they really call the fish globe. It is a globe cut into three.

3634. Is that a sufficient lens for a side light?—No, and there is not sufficient colour in it. There would be a difficulty in knowing whether that was a white light or not, and that is one advantage of this bottle. However little you may have of this colouring matter in your glass it always shows green.

3635. (*Chairman.*) So that you attach considerable importance to the exact shade of the light?—Yes, the tint. I supplied them with the cases of the proper tints for all the Board of Trade offices.

3636. What is *that* piece?—*That* is got out of a lens which was broken. I broke it up to show you. You will see from the depth of colouring there that the greatest search light would not penetrate it.

3637. (*Rear Admiral-Andoe.*) Is that a lens that is at all commonly used?—It is not so very common now, but it used to be; if I had been sufficiently well I should have gone down to the ship chandlers' shops to look, and, no doubt, you would get many more. I have long put these lights before the public, and I have long been advocating this alteration; they have been improved in recent years.

3638. Do you make any lenses at all like that?—No, I have never done so.

3639. You consider that they are so inferior that you would not make them?—No, because I put my name on all the lamps, and I would not do so on a lamp that I knew would not meet the requirements.

3640. I believe the Board of Trade advocate a white lamp or globe with a thin green shade inside?—Yes. I was the first to introduce that.

3641. Do you consider that is superior to having the lens itself coloured?—Yes, I have thrown cart loads actually of this sort into the dust heap before I adopted this one. In fact, I never could have carried on my business if I had continued to use that.

3642. (*Sir E. Harland.*) Is the colouring matter in a film on each side of the lens?—That is through and through; the film is on the ruby. The ruby is flashed generally on the lens. Before I adopted this plan of the slide, I had the green also flashed on, but not with the standard tint. There were little dark patches at parts, and you had always some regret at seeing it was not up to the mark. You could get the glass cut so as to cut off so much of it, but then it did not make a sufficient job.

3643. (*Rear-Admiral Andoe.*) Do you think if the old regulation had been left alone, and the 4° not introduced, that for all practical purposes, if it had been properly carried out, it would have been sufficient?—No doubt it would. There cannot be the slightest doubt that it would; in fact, I have never yet heard it said in any document or report, that there is any evidence of its being required there, and I have never heard any complaint outside about that. I remember the late James R. Napier—I took the trouble of getting a copy from Scotland—wrote a paper on it, but what he was complaining of at that time—this is in 1867, nearly 30 years ago—was that the Board of Trade were not doing their duty in attending to the screening of the lights. They were screened anyhow. That is an illustration which came out with the paper (*produced*). I think I have the paper. Of course, at that time, there were only two surveyors in Glasgow, an engineer and a shipwright surveyor, but now they have a regular army of surveyors, and I think they should have no difficulty in seeing to the screening. They only require to see that the others do it.

3644. (*Rear-Admiral Andoe.*) And also to see that the light is one which comes up to a certain specification, I suppose?—Yes.

3645. Do any of the photographs which you were showing to the Committee represent what you ordinarily supply to the Navy?—These are the lights here, and the centre one is the mast-head light. I think I have some more here.

3646. I want to see one supplied to the Navy?—They are pretty much all alike (*producing some more photographs*). These are the lights I supply to some of the tramps. Some of the tramps carry good lights.

3647. What would such lamps cost, do you think, the ones you supply to the tramps?—These, I think, are 15*l.* or 16*l.* the set of three.

3648. About 5*l.* each?—Yes, about that.

3649. And for that you can make a really good lamp?—A very good lamp.

3650. (*Chairman.*) Copper?—Copper.

3651. (*Mr. Ismay.*) Do you ever go to sea at all to judge of your lamps?—Well, I have not done so for many years. I do not go afloat now.

3652. But you have done so?—Yes, years ago. I sailed a good deal at one time. A captain on one of the mail steamers on the Clyde was complaining of the red light. He always maintained that his red light was not equal to the other lights in the fleet, and it was arranged that I should see it. I was staying down Dunoon way, and I knew the time that the steamer left Greenock and was on the look-out for it, and when he came down opposite me he took a turn of his ship's head on to where I was, and then went on. But I have had a good many opportunities of seeing and inspecting these lights in that way. Besides, I have been at sea considerably, although it is a long time ago.

3653. You mentioned Messrs. Burns's steamers. Do you know what they were screened at before the alteration?—Yes.

3654. What were they screened at?—Well, that is what I have been endeavouring to explain in this drawing; that it is somewhere about 2° measuring from the outer edge of the wick.

3655. And there the chocks were cut down to meet the Board of Trade requirements?—Well, if it had been only that there would have been less trouble in the matter. Then in addition to that we had this alteration of the wicks, the turning of the burners; in fact, I had to get a special burner made to comply with these requirements, because when you screw in a paraffin burner or a mineral oil burner, it gives in

like *that* (*describing*). We fix it to start with as it is required, but in a few days with the repeated screwing it gets further round, but I have a burner made specially fixed in a different way with two catches; but I do not suppose other makers have bothered themselves about it.

3656. Have you had any of your lamps found fault with by the Board of Trade surveyors?—Not for many years. The original tussle which I had with the late Mr. Gray I think settled the question. In point of fact, they had not another light out of the whole lot that met the requirements of the Act.

3657. Then you attach a great deal of importance to a good lamp, well fitted and well constructed?—Yes.

3658. And uniformity?—Yes. We cannot get them quite uniform. That would be practically impossible to do; we could not make them quite uniform.

3659. As near as may be?—As near as may be.

3660. Captain Hallett asked me to ask a couple of questions, as he had to leave to catch his train. He wanted me to ask you how you made your glasses, whether you cut them into three?—No, I do not do that at all; they are all made for myself.

3661. And then you divide them into three?—No, I do not; they are made singly.

3662. You make yours singly?—I make mine singly, each to suit its own lamp.

3663. Then you showed us how you produce the green light through the blue glass there?—The signal green, I would not call it blue.

3664. How do you obtain the same effect with the electric light?—The very same. The incandescent light is exactly the same as oil; that is to say, it is rather yellow. This rumpus about the effect of the light upon the green light was all nonsense. The Russian naval attaché mentioned to some of the Board of Trade officials that in the Russian Royal yacht the green light did not come well out; but I referred in my letter to the Board of Trade to the fact that I fitted the lights for the Russian yacht, and they were arc lights, Jablochkoff lights, which is a kind of arc; the signal green is not suitable for an arc light. Well, I went to the trouble of getting a spectroscope and testing the lights in every way, and there is not the slightest variation in the tint of the green required. But the arc lamp requires daylight green.

3665. That is whether the light is paraffin oil or electric?—It is all the same.

3666. (*Mr. Bolam.*) Do the Clyde surveyors compel you to put the wicks at right angles to the fore and aft line of the vessel?—Yes.

3667. Because the instruction issued to them is that the wick-holder should be placed in the position of greatest efficiency?—Well, that may be so, but the difficulty about the thing is that the surveyor will pull out his book and show you private instructions, and the book does not hold with that.

3668. In other words they interpret these instructions in that way, that they should be at right angles?—Yes.

3669. How would you place your wicks, if you had your own choice?—I would put them broad on the lens, but in a short time, as I was explaining, with the mineral oil, it gains a little in screwing. In fact, I never looked at the position of the wick; if it was within the focus, that is all practically I cared about.

3670. It is unimportant?—Yes.

3671. These photometric experiments you made were made with lamps which were properly focussed, and they showed that even with the best lamps we do not get a uniform light over the whole 10 points?—No.

3672. But practically uniform?—Yes.

3673. It only shows that in matters of this sort it is of no use bothering with infinitesimals?—Yes.

3674. Do you believe much in the photometric value of the luminosity of the lens?—The lens does not give any light at all; the lens is a transparent medium that the light passes through. It merely alters the direction, but it does not produce any light.

3675. That is to say it would do all that if the glass were absolutely perfect?—Yes.

3676. I want to know if you attach any value to what has been put forward by some witnesses here as to the distinct lighting value given by the lens?—I would attach no importance whatever to it; it is a light you can see from alongside of the lamp, but you do not see it any distance away.

3677. You have fitted your lamps yourself in a very large number of the best merchant ships in this country?—Yes.

3678. And you have personally superintended the placing of these lamps yourself?—A great many of them.

3679. And you can say with absolute certainty that previous to the 4° rule coming in, the inside of the wick, and the inside of the lens, and the outer edge of the chock, were all in the same fore and aft line?—In a line.

3680. And therefore in all these vessels to which your lamps have been fitted a 4° angle must have increased the angling from the outside of the wick?—Most undoubtedly. Many ships fitted with my lights take great trouble to keep them right; for instance, a lot of the German lines and the French steamers that have been supplied by me, get instructions from my men to fit them.

3681. (*Mr. Scrutton.*) Did I understand you to say that mineral oil without a chimney is not up to much?—No. It is not up to much.

3682. You regard a chimney as essential. Would you make the length of the wick absolute, or would you allow variation?—The width you mean.

3683. Yes?—Well, of course you know if you required a light to show two miles, it is an easy matter to find what sized wick is required; once you find that out, then that should be the size of your wick; nothing less, because I hold that in all cases at the trial you ought to have some spare power; the lamp is not always so well trimmed, and unless you have originally to begin with some spare power the chances are it will not show the distance.

3684. Do you see any difficulty in making a standard lamp, or requiring a standard lamp as to the lens, and as to the position of the wick?—None whatever; any of my lamps would do for that.

3685. Do you think it would be an easy thing, supposing that it were a matter of legal requirement, that the lens should be of a certain colour; do you think that could be easily carried out?—Yes, I think that should be imperative—the colour. I have advocated that for years, because there is nothing which has done more injury than defective colour. I have seen vessels with glasses in their lamps of such a sort that you would not see them at the bow of the ship—no light at all—and yet it is not for cheapness. I would not run down the ship owners, but really they do not know—they are imposed upon, and I say the surveyors ought to be competent when they look at a thing to reject such a thing as that. I do not think there are many of them now, but there used to be plenty. (*Referring to a thick dark glass.*)

3686. (*Sir E. Harland.*) Some of the information you have given us refers to the angle of screening?—Yes.

3687. I suppose you went into this question, and you gave it consideration, not so much as a necessity upon the part of a manufacturer of lamps, as on account of the inferior treatment, one may say, your lamps received by being placed differently according to varied methods of screening?—Well, I may mention that the question of screening is a thing which was at the time taken up by myself in my own interest, because in cases where a vessel has a tower the carpenter gets inside the tower and cannot tell almost the head from the stern of the ship, and the chances are that the lights would not be properly fitted; so I take it upon myself to go down and attend to that part of it. I have no charge, and I have no order to do so, but I make a point of doing so in my own interest.

3688. In the early days of lamp making was it the case that the fish globe glasses which were generally in use then were made in one globe, which was cut into three?—Yes, that is done yet, by thousands.

3689. Is that sufficient to enable the light to show over the 10 points?—Yes, if you cut out a third of a circle you have a little left for fitting; you have more than sufficient, because previous to the 4° angle, all you required was 112½°. That is not quite the third of a circle, and leaves a little margin for fitting.

3690. So that when ships were more generally fitted with these fish-globe glasses, the glasses, if they showed

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the 2 points abaft the beam, could not show across the bow to such an extent as 4° or 5°?—I do not think they would be long enough for that.

3691. Coming to the recent order which is supposed to have increased the angle of screening, has it driven you to the necessity of extending the circle of your lens?—Yes, lengthening it.

3692. So as to prevent the inner edge of the lens from interfering with the 4° of screening?—Quite so.

3693. But so far as you as a lamp maker are concerned, the screen in question, strictly speaking, has nothing whatever to do with your department?—No.

3694. Would you advocate fixing a standard pattern or standard lamp?—I have a letter on that subject here which was written to the Board of Trade. Perhaps you will allow me to read it:—"Glasgow, 6th. July, 1891. "Dear sir, I do not see any difficulty in surveyors testing "signal lights in a thorough manner after they have "been properly instructed, and are in possession of suit- "able apparatus for this purpose. If it cannot be done "on board the ship it could be done at the Board of "Trade Offices; the lamps being sent there for this "purpose. Before, however, going into the details of "'Instructions to Surveyors for testing Lamps' I "consider it will be necessary to decide first, by "further experiments at Shoeburyness or elsewhere, "what is the least power admissible. This can be "done by fitting various sized burners to the lanterns "recently supplied, and noting the distances at which "the light can be seen. In this way you would arrive "at a lesser standard of lantern which might be "permissible for smaller craft. It would be a guide to "me in future experiments if you could inform me "at what distances the light can be seen in the lanterns "recently supplied, but, meanwhile, it would be a "great step in advance if all solid coloured lenses "were condemned, more especially the green lenses. "There is not one of them can show the light "the required distance, a fact which would be "easy for you to prove by borrowing lanterns from "some of the ship chandlers or lamp makers. You "will not require a very long range until you will lose "sight of them altogether. The red lenses are not "so faulty, as it is only a thin film of red that is "usually flashed on the inside of the lens; there are "some of them, however, which are very bad. Another "very serious defect, which you should have no "hesitation in condemning, is the usual system of "fitting a colza oil burner and a mineral oil burner to "the same fount, the difference in height in some "instances being over two inches. This difference in "height is supposed to be corrected by having two "sliding grooves at different heights for the lamps to "be slipped into. You will understand, however, that "a boy in the hurry of trimming the lamps is quite as "liable to put it into the wrong groove as into the "right one. I have always made it a point to supply a "separate fount of the correct height, and properly "focussed for each kind of oil."

3695. To what point did that letter refer?—It referred to the instructions to surveyors.

3696. Then you are in favour of some such general directions being given in the future for the construction of lamps?—Most distinctly.

3697. Then would you be in favour of fixing the distance from, say, the centre of the wick to the inner face of the lamp, so that when a strange lamp were fitted it would ensure the same amount of screening? Would that be your idea?—I think the present measurement of what you may term the external dimensions of the lamp have been so many years now insisted upon that I do not think there should be any alteration made in them. The inspection I would like to see would be more of an optical kind; to see that they are really right as optical instruments, and comply with the law in that respect.

3698. If the light is to be always screened to a definite angle, can lamps be interchangeable unless there is a fixed measurement from the wick to the inner edge of the lamp?—That would be quite easy to lay down.

3699. But would you advocate that?—I have no objection to it.

3700. But could you do without it?—You must have some uniformity some way, and one must take a little time to think over the details of that sort.

3701. Suppose that the screening were found to be accurate with a lamp in which the wick was so many inches distant from the side of the lantern; if you substitute another lantern of a different measurement, would not that make a material alteration?—It must do so.

3702. Then would it not be necessary that there should be a standard distance from the inner edge of the wick to the frame of the lamp?—Yes, of course. It might vary in different classes of vessels. Some very small craft are perhaps only 20 feet broad, and they need not take these very large lamps. I think in these cases a smaller lamp might be adequate.

3703. Assume that there were three sizes of lamps. No. 1 lamp, which was a certain distance from the wick to the inner surface of the lantern; No. 2 lamp, for smaller ships of another gauge; and No. 3 lamp for the smallest; would it not follow that each of these three classes of ships would invariably carry their own particular class of lamp, and in that case would they not be able to change their lamps and yet retain the accuracy of their screening?—I think, as regards that, the larger vessels always want something better, as good as can be got, and I do not think they will be guided by a direction of this sort, to have the lamps interchangeable.

3704. It is only the point I wish to draw your attention to, not to the precise manufacture?—As regards the power and the size, the large companies, I know, will have the best they can.

3705. Supposing such a restriction were made by the Board of Trade, you see no reason against it; you, as a lamp maker, being left free to improve the lamp with regard to its strength and its lighting capacity?—Yes; just to keep to these dimensions; I do not see any difficulty.

3706. Would you advocate the centre of the wick, in that case, being taken for the measurement, or would you take the inner edge or the outer edge of the wick, in view of various arrangements of wicks, and in view of the electric light being used?—I think the centre would be proper.

3707. Now as regards the centre, you have advocated, and one of your drawings shows, a duplex burner, and in that I notice you have two separate regulators for each wick, is that so?—That is the big drawings, that is colza oil.

3708. Do you think that is a better plan?—Yes.

3709. Would you recommend that for all classes of oil?—No; that is a special thing that I make myself.

3710. Then it is bound to be very good. And in that case would you not recommend that each wick should have its own regulating screw?—Yes, I do not approve of the one screw.

3711. Where there is only one screw have you found that one wick would be elevated or depressed at a different rate to the other?—Yes.

3712. Hence you prefer each wick to have its own screw?—Yes, I would not have it otherwise.

3713. A duplex wick represents very nearly a circular column of light?—Yes, it approaches that more than anything else.

3714. Then does that account for your remark that there would be no difficulty as to whether the wick was at right angles to the centre line of the ship, or fore and aft, or otherwise?—Yes, in either case, with two wicks, there is not much difference.

3715. And there is less difference with one wick?—No, but it is sufficient for all practical purposes.

3716. You would advocate two?—Yes. You could hardly have a sufficient power with one wick.

3717. Would you say that the breadth of the light produced by an incandescent light would be pretty much the same as the breadth of the light, from, say, a duplex burner?—Quite the same whether you stand it edge on or flat; there would be very little difference.

3718. So that with a duplex burner and with an incandescent light you have pretty much an uniform width of light, never mind how the light stands in the lantern?—Yes, providing it is within the focus.

3719. If you were not obliged by the recent order of the Board of Trade to put the wick at an angle of 45°, you would be freer to have your adjusting screws applied at the proper position in the lantern of the lamp. In this drawing which you have submitted, I notice that your adjusting screws are square in from the side of the lamp?—Exactly.

3720. Supposing that you were required to have these wicks at an angle of 45°, you could not have it?—I could not have it with that construction.

3721. So that this regulation, that the wick should be at an angle, interferes with the lamp maker putting this adjusting screw either on the one side or the other?—Quite so, it is quite unnecessary.

3722. You therefore would advocate that the wicks should be parallel to the keel or at right angles to the keel?—I would leave that matter open, because the burners change of themselves with the working; that is to say, by the repeated use of the screw it would become parallel with the keel.

3723. You referred to lamps being on gimbals. Have you seen a lamp which was before the Committee made for Mr. Corry, which was on gimbals?—No.

3724. Have you made many lamps on gimbals?—Yes.

3725. Do you think that being on gimbals makes the light plainer?—Yes, that is one of the greatest advantages of the light towers; it enables a proper fitting of the lamp in the tower.

3726. Have you ever tried lamps canted over to a considerable number of degrees to port or starboard?—Yes, the difficulty of that is that it is not so suitable for oil. When you have them canted over the oil runs out, and when you have the lamps in other positions the oil flows up and puts out the light.

3727. So you think there is an advantage in having lamps on gimbals?—Yes, but the great majority of shipowners cannot fit them on gimbals; they have not room or accommodation, and to recommend that all the lights should be on gimbals would be to recommend an impossibility.

3728. Are your lenses ground at all, or are they simply cast in moulds?—They are all pressed in moulds, and afterwards cut off; you cannot make a proper lens without cutting it.

3729. That is skinned; cut over, through the grind stone?—A glass cutter, yes; this is one here.

3730. But are you aware that there are dioptric lenses in use which are simply cast?—Yes.

3731. Of more or less accuracy?—Yes, approaching something like accuracy.

3732. Do you prefer them to be ground or cut?—Cut glass.

3733. You refer to the light from such lenses being a sheet of light. Do you mean a sheet of light horizontally or vertically?—Horizontally; if you had an arc-light in the focus of an accurate lens you would simply have a sheet of light. With an oil burner you have a larger flame, and the result is that your sheet of light is a little thicker, but nevertheless it is still a sheet of light of great thickness, and it does not diverge up and down.

3734. Do you advocate the dioptric lens for ships?—Yes.

3735. Supposing a ship to be very much by the stern, or by the bows, the sheet of light would be still sent straight forward by the dioptric lenses?—But I do not advocate lenses of that kind. At the time 20° divergence was mentioned, that was the question we were speaking of. I never would propose a lens without the divergence for navigation. You must have at least 10° of divergence.

3736. That is to say, that if the ship were loaded by the stern 10°, a vessel ahead would still see the light in full force?—Yes, I do not think 10° is a guide.

3737. Assume, for instance, that the ship were in distress and sinking by the stern, and under such circumstances she was not able to readjust her side lights, do you think that the dioptric lens to which you are referring as driving forward a sheet of light, would be desirable?—I think not. You will never have a light of sufficient power without a lens. Of course, I know the word "dioptric" and all that sort of thing has been pretty commonly cast about, but plano-convex for instance is dioptric. The proper term to describe that is "prismatic."

3738. In the way you cut them there would still be ample margin for the vessel to be either down by the head or by the stern without interfering with the due fulfilment of the values of the light ahead?—Quite so. I would not advocate that. That would not be sufficient. Of course, when you have a vessel with 20° of permanent list, then your oil lamp is not suitable in that position.

3739. Are there any other particulars besides distance from the centre of the wick to the face of the lantern, upon which you think such an authority as the Board of Trade should make a regulation in order to make the lights more or less interchangeable?—Well, I could hardly say right off from memory; I must think over the matter.

3740. Would you advocate that the green light should always be illuminated by a duplex burner as against a single wick for the red?—I would illuminate the whole of them with a duplex.

3741. You do not see your way to any method of extra lighting to bring the green light up to the red in strength for distant observation?—Well, I do not think that is necessary; the regulation says 2 miles, but it does not say it is not to show it 3 miles. It is not to be less.

3742. But do you recognise the importance of both lights being seen at the same distance?—Well, I do not know that I could easily deal with that.

3743. Supposing, for instance, that a vessel were coming down upon you at, say, 3 miles distance, which no doubt is a long distance for you to make up your mind as to what you are going to do, and then you only saw the red light, though the green light is really showing excepting that it was very much weaker?—Yes, but if the ship were under way it would only be for an instant or two, because the green would come in directly if you once saw the red light. But I tell you what I saw when I was on board of a certain company's vessel. I was then fitting the electric light, and the superintendent told me he was putting in two 100-candle lamps, and possibly they might go in for 200-candle lamps. I said, "You know if you put in power of that "sort you will not require any lens at all." But the lamps which he had put in I pointed out to him were completely out of place, so he asked me to write up to him after I got home about them, and I did so.

3744. In the experiments you described previously the light was not of the same strength at different points. Do you think that such variation is due to the fact that the reflector cannot be, or is not usually, made to extend as far round as it might be?—There is no doubt that the reflector must cause a variation, although you cannot easily trace it. You have a reflector, for instance, *there*; when you come *here* it is different.

3745. Do you see any objection whatever to the reflector coming round so far as at least not to interfere with the two points abaft the beam, and to come round as far on the other side as not to interfere with the angle of screening?—There would be no good in making it more than the half circle, certainly.

3746. Would you advocate the half circle?—Well, I do not know that there would be much advantage when you come to these extreme points.

3747. But taking this lamp in which the reflector stops short at *this* point, are you not willing to admit that a considerable amount of reflection is wasted for want of this little arrangement?—There is no doubt there is light lost passing through, whereas it would be reflected to the focus *here* if you had a reflector *there*.

3748. So you think the reflectors also might be improved with a view of utilising more completely the value of the light?—Yes, that was Mr. Thomas Stephenson's great idea, to utilise the whole light.

3749. (*Rear-Admiral Andoe.*) You did not mean to imply just now that the Admiralty lights supplied by you were not very good, did you?—No, they are the very best lights.

## Thursday, 20th June 1895.

PRESENT:

The RIGHT HON. SIR F. H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Mr. BOLAM.
Captain CASTLE.
Sir EDWARD HARLAND.
Mr. ISMAY.
Mr. SCRUTTON.

Mr. C. HIPWOOD, *Secretary*.

*Capt. W. S. Wade.*

20 June 1895.

Captain WENTWORTH SHIELDS WADE called and examined.

3750. (*Chairman.*) You are a shipmaster, I believe? What is the length of your experience?—Thirty-three years.

3751. In what company are you now?—In the Waterford Steamship Company.

3752. Their vessels run between Liverpool and the Bristol Channel and Waterford?—Yes.

3753. Have you had experience in the coasting and channel trades?—I have had about 15 years' experience as master.

3754. Do you hold any pilotage certificate?—I hold five pilotage certificates.

3755. And during what part of the year are you navigating the Channels?—At the present time I am navigating the Channels about half the year.

3756. Have you had experience besides in the Atlantic and foreign trades?—I have had 18 years' experience in the Atlantic and foreign trades.

3757. I believe you are a member, are you not, of the Council of the Mercantile Marine Service Association?—I am.

3758. How is that body composed?—It is composed of certificated shipmasters, officers, and a few engineers.

3759. About what number?—Well, I think there are not more than about 20 engineers.

3760. But I mean what is the total number?—About 3,000 members.

3761. I believe it is connected in a friendly way with the leading shipowners in Liverpool and elsewhere?—We are.

3762. And you desire, I believe, to give evidence as the representative of that body?—That is so.

3763. Can you tell us briefly what experience you have had in the screening of ships' side-lights?—I have had a good deal of experience. For many years I have studied the question as a practical man, and have had many opportunities of doing so in the ships of our fleet and in others. I may state at the outset that the fundamental principle of side-lights is implied in the name itself, and they were originally intended to show an approaching vessel on which side she was, and the utmost precaution was taken that side-lights should not be seen across the bow; hence the very clear and sailor-like language of the international regulations. Until recently the side-lights of all ships I have commanded or been acquainted with have been screened in accordance with the international law; that is, parallel with the line of keel.

3764. By parallel with the line of keel do you mean screened to the inner edge of the wick or to the outer edge of the wick?—The ships of the company in whose service I am now, before they were altered, were all screened to the outer edge of the wick parallel with the line of the keel.

3765. Have you found that efficient lights so screened have sufficiently converged ahead?—That is our experience.

3766. Have you any special knowledge of the effect of side-lights when screened to that angle?—I have; the ships which belong to our firm are 14, and I will give you the date of their screening. Twelve of those ships were formerly screened parallel with the line of the keel, and have all been altered by the Board of Trade instructions to a 4° angle. Ten of these ships carry passengers, and the other two are cargo boats. The two other ships to make up the 14 are new vessels built since this regulation has been in force, and I did not quote them; they are screened to the 4° angle. I may say that these vessels were formerly screened to the outer edge of the wick, parallel with the keel, and since then the chock has been reduced 2½ inches to give the 4° angle. The effect of this alteration has been that I have observed both side-lights on the forecastle head of three of these ships, one being especially apparent owing to the superior quality of her lamps, the largest and best lamps made.

3767. What other information can you give us illustrating the crossing of the screening?—1st. In very narrow waters you would put your vessel ashore before you could shut in the green light of an approaching vessel, and this frequently takes place and has occurred to myself in the River Avon. 2nd. When meeting a number of vessels in narrow water such as the Mersey and going the opposite way, one of them was showing us his red light a little on the port bow and four others were showing their green light on the starboard bow, and the nearer one of these latter got a glimpse of our port light and ported, calling upon us to do the same. The other three in turn seeing our red light due to our porting, we had to port for the whole lot, running right across the river and across the hawse of everything to an anchor with a strong flood tide running. In this case I had to keep under the port helm and take a round turn out of her, as I was too far over to recover under my starboard helm. 3rd. Meeting a steamer on your starboard bow showing her green light to your green you keep on your course, the officer in charge of the other ship thinks he had better starboard a little to give you more room, but just as he elects to do so, you get a glimpse of his port light and port; as he has starboarded you fly off towards one another, with the consequent danger of collision due to the fact that your lights show across the bow. I have had some bad examples of this. 4th. Two steamers meeting and seeing one another's green lights narrow on their starboard bows, both may say safety and keep their course, but when getting close together one gets a glimpse of the other's red light owing to its being screened to show across the bow, and at the last minute ports at the serious risk of collision. This I have frequent experience of. This green to green narrow on the bow is a position of very great danger, and has been much increased by the side-lights being allowed to show across the bow. This Rule much needs amending.

3768. Which Rule needs amending? I hardly understand exactly what you mean to convey. Is it the rule that you must port that you refer to?—No, under those conditions you would not be called upon to port.

3769. If you saw green to green very narrow on the bow, what, at present, would you consider it right to do?—It is the invariable practice to starboard a little and give the ship more room.

3770. So that in your view it is desirable under those circumstances not to catch the glimpse of the red, because if you do, that suggests to you that you ought not to starboard, but to port?—That is so, but it has happened as I pointed out in one of those examples, that just before the ship had starboarded to give you more room you had seen his red light ported, and were called upon to port, which you did. In that case it was just a question of sea-room, whether you clear one another. Then there is another note. I have frequently met steamers in the early morning and on

clear moonlight nights when I could see the vessels' hulls plainly, and that they were heading in such a direction as would go well clear of us, but at the same time both side-lights were plainly visible. I could state instances of such positions that have occurred to myself since the Order in Council of 1893. All the steamers of the company that I am in were screened in a line parallel with the keel and have since been altered to the 4° angle.

3771. Do lamps of good power show across the bow more than lamps of less power?—They do.

3772. Is it your opinion that lamps should be screened to the outer edge of the wick?—That is my view.

3773. You also, I think, attach importance to the lamps being of uniform power and being thoroughly efficient?—Yes.

3774. What objections have you to state as to the Order in Council altering, or professedly explaining, the international law?—First, we object most strongly to the Board of Trade obtaining an Order in Council in entire opposition to the expressed opinion of the shipping interests of the country, those interests having no voice in the matter, and my association have petitioned Parliament on this subject. I might add that no notice was taken of it.

3775. (*Mr. Bolam.*) You have petitioned against the Order?—Against the Order. Now the Order in Council has so altered the language of the International Regulations that the words "shall not be seen across the bows"—which every sailor knows to mean by other ships—now reads "shall not show across the bow of "the ship itself." When lights are screened in accordance with the International Regulations in a line with the keel, and so as to be visible from right ahead of the light to two points abaft the beam, lights so screened are clearly visible ahead of the ship, and in practice there is no such thing as a dark lane; the glass of the light being an arc of a circle shows a ray of light converging ahead of the ship. Should such a thing as a dark lane exist, it could only occupy the beam of the ship, and as all vessels go off their course more or less in steering, you would open and shut their lights, and in the case of steamers (which are the great majority) you have masthead lights. In any case a dark lane would be preferable to the present squinting lights, tending as they do to danger.

3776. (*Chairman.*) I think you have a diagram here, have you not, showing the erratic steering of steam and hydraulic steering vessels?—I have (*produced*). This is a diagram taken by electric apparatus attached to the compass of the Isle of Man steamers from Liverpool to Douglas. That is the Bar lightship, or the Formby lightship, from which she takes her departure.

3777. Do these represent the course of the vessel?—These represent the variations in the course of the vessel over the voyage.

3778. (*Sir. E. Harland.*) Magnified, of course?—Well, to get a correct interpretation of that, you would have to extend that over a distance of 60 miles, and then take the proportion of those; it looks rather misleading.

3779. (*Mr. Bolam.*) Could the witness state whether the scale of the diagram breadthways is the same as the scale of the diagram lengthways, because that is a very important point. It is a common plan to increase the scale in one direction for certain diagram purposes?—I could not say. I have got the diagram just as it is, and I did not get any further explanation more than what you see. Of course, some of the greater deviations from the course may be due to the altering the ship's helm to avoid other vessels.

3781. (*Rear-Admiral Andoe.*) *That* line does not represent the course of the ship, does it?—It represents the deviation from the course.

3782. Does it; it is nearly at right angles to the course?—As I said before, you would have to extend this to the length of the course steered to arrive at a satisfactory conclusion. These are for the purpose of ascertaining whether you have made a course good by running a line through the centre of them, and then you see which side of your course you have deviated most; it was not intended for this purpose only. I thought it would probably illustrate the fact that the ship would not keep straight on.

3783. (*Chairman.*) I dare say you could tell us from your own experience within what distance each way vessels will steer?—Well, our vessels are among the best steering vessels in the Channel, I should think.

3784. What do you keep to?—Well, one vessel that I have commanded you could keep her within about 1° of each side of her course.

3785. That is very good, is it not?—She is the best steering vessel I ever was in, with the exception of some of the White Star steamers in the Atlantic trade.

3786. (*Mr. Bolam.*) One degree each side?—Yes.

3787. That is 2° of variation?—Yes.

3788. (*Chairman.*) That is very good, is it not?—Yes, it is very good steering, and only experienced men that are in the habit of steering those vessels could keep them so close to the course as that.

3789. When the side-lights are allowed to show across the bows, is the appearance of the lights at their respective heights altered?—It is; there is some optical delusion arises due to the angle which gives them a very peculiar appearance; one light appears higher than the other. I never noticed this particularly before this angle had been introduced, and it was meeting our own ships as we sailed from each side on the same day, we always met in the channel, and I noticed they appeared to me to have a list, and a heavy list; and in speaking to another captain I said, "Your ship has a very heavy list." He said, "No," and it was in that way that I first noticed it.

3790. Now, as to the placing of the side-lights; where do you think they ought to be placed?—We are of opinion that amidships abaft the masthead light is the best position for a side-light; by that means you get the angle from the masthead light, and it gives you the earliest and clearest indication of the alteration of course that may be taking place and the direction in which the ship's head is.

3791. I should just like to be quite certain I am right. As I understand it, you state that your ships before the last alteration were screened in a line with the keel to the outer edge of the wick?—That was how our ships were screened. I have got the entry here from data that I took off the ships. The "Dunbrody" is the ship I commanded myself, and in her the lights are visible at 96 feet ahead of the lights; that is, at the stem.

3792. That is as at present screened?—Yes, and in that vessel 2½ inches were taken off the chock.

3793. In order get to the 4°, I understand?—To bring the light into the 4° angle. In the "Lara," the ship that I was in for seven or eight years, the lights are both very plainly visible on the forecastle at about 95 feet ahead of the light. They become quite blinding in working the rivers, so much so that it becomes absolutely necessary with the green light to have a man to hold a canvas screen to prevent its throwing on the ship and blinding you. Immediately you saw anything coming the screen was removed; but I have frequently in a river gone aground on the banks, which was due to the fact that you could not see anything with the light illuminating the ship herself.

3794. (*Mr. Ismay.*) Across the forecastle?—Across the forecastle. The ship was altered, and 2½ inches came off the chock at the end of the screen, and she ran for 12 months like that; she was re-surveyed, and the Board of Trade Surveyor on the completion of his survey instructed me to to take another half inch off the chock, which I declined to do, and it has not been done yet. I had very serious thoughts of putting a large piece on to the chock, because of the difficulty that we got into through the way that the ship's lights were screened. They show me the danger that we are being led into. The only time I have been in danger of collision when in charge of the ship myself in clear weather has been due to the lights showing across the bow, and these lights have kept me on my feet many a night when I should not have been, just because the traffic was pretty close and you did not feel safe. There is one other ship, the "Creaden"; I measured her lights and she is an altered ship, and I find, as she stands now altered, that she is screened to 4 inches to the inside of the wick, or to 5 inches to the outside; both her side lights are plainly visible 70 feet ahead of the lights.

(*Chairman.*) I do not know what that would be in degrees.

*Capt. W. S. Wade.*

20 June 1895.

3795. (*Mr. Bolam.*) That is 5 inches in 36?—5 inches, yes.

3796. That would be 8° from the outside of the wick fully?—Yes, that is what it is in the ship; it is just double the angle in the vessel that it ought to be.

3797. (*Mr. Ismay.*) Has she been passed by the Board of Trade surveyor?—She was altered to that by him.

3798. (*Mr. Bolam.*) Is that one of your ships?—Yes; she is one of their own altering; all these ships were altered.

3799. (*Mr. Ismay.*) Where were they altered, in Liverpool or Waterford?—I could not just say where this vessel was altered, but I think Liverpool; but they have been altered in Waterford and Liverpool and in Cardiff, three different ports. Two of the ships in Cardiff, and, I think, five of them in Liverpool, the remainder would be done in Waterford. We also have a new ship, a cargo vessel. I attended to the construction of that ship, and I see that she is screened to an inch and one-eighth to the inside of the wick.

3800. (*Sir E. Harland.*) Perhaps the witness would explain on a map like this (*map produced*) where the inch and one-eighth is measured from?—The inch and one-eighth would measure thus: the outside end of the screen was an inch and one-eighth inside the inner edge of the wick.

3801. (*Mr. Bolam.*) And how much does the wick stand perpendicular to the fore and aft line of the ship? Never mind the size of the wick actually, but *this* way. Would it have an inch, or half an inch, or what?—It is an inch wick.

3802. That is 2 inches and one-eighth in a 36-foot screen?—Yes, these were just observations that I have taken myself off the ships from time to time as I have had an opportunity.

3803. (*Sir E. Harland.*) The inch and one-eighth to which you refer here is 4° from the outside of the wick?—I beg your pardon. I do not really think that this $2\frac{1}{8}$ inches from the outside of the wick would give the 4° angle; in this case you only get $2\frac{1}{4}$ inches.

3804. (*Mr. Bolam.*) It is $3\frac{1}{2}$°?—Hardly that. From our standpoint we do not object to screening to a less angle, quite the reverse. Only it just shows the way that this sort of work was being attended to, that though they profess to screen the lights accurately, it is not done accurately.

3805. (*Chairman.*) But, as I understand your argument, you would rather be in favour of screening to the outer edge of the wick in a line with the keel?—That is our view; and the fact that they were screened in this way is proved by the Board of Trade surveyors themselves, because they took $2\frac{1}{2}$ inches off the end of the screen, which exactly makes the difference. Well, in those series of years in meeting those vessels I never saw them in any position where I could not see both side-lights when ahead of the ship.

3806. You said you laid great stress on fulfilling the obligation that they are to be seen right ahead, but an unbroken line of light would not be seen right ahead even of the lamp itself, if you screen to the outer edge of the wick, would it?—Well, we found in practice that it was so on one of our vessels before this Order in Council came into effect. But when the Instructions to Surveyors came out in 1892, it was handed to me to comply with in respect to a new ship. After completing the new vessel, I went and made a series of experiments upon one of our older ships with Harvie's best lights, the best he made at the time, and I found by screening to the outside edge of the wick, and going a matter of 600 feet ahead of the ship in the dock, I could see both these side-lights perfectly plain. That was in the dock, and on the ship herself. I screened the lights in several ways. I tried it with the angle, and tried it with the inside of the wick, and tried as she had been screened up to that time, that is, to the outside of the wick, and I found that at the end of the dock—it was not a large dock—that I could see both the side-lights quite plainly, when screened to the outside of the wick.

3807. (*Rear-Admiral Andoe.*) Originally the Board of Trade laid down that the line drawn from the inner edge of the wick to the outer edge of the chock was to be parallel to the keel. In view of that regulation, how was it that you screened your lamps from the outer edge, so as to obscure the actual rays of the light from the lamp itself from being shown right ahead of the lamp?—Previous to the Instructions to the Surveyors of 1892, I have never known a Board of Trade Surveyor to measure any chock or light screen or anything connected with it, with the exception of examining the lamps when they were unshipped to see that they were efficient articles—I have never—and my experience at sea has been in passenger vessels—vessels which hold a passenger certificate from the Board of Trade—up to this period known of a Board of Trade surveyor taking and measuring the screens or anything connected with them in passing his survey.

3808. But you say that the chocks projected sufficiently from the screen to obscure the lights from right ahead of the ship?—The chock projected sufficiently to be in a line with the outer edge of the wick, but we never found that it had obscured the light from ahead of the lamp.

3809. But, as a matter of fact, if you had the chock immediately in front of the wick it must have obscured the light from the wick itself, and all the light you had ahead of the ship was due to what was seen from the glass?—Well, I may just say this upon the question of optics. I do not know anything about them. All that I may know has been gathered from the lights and the position of them; it has just been from the experience that I have had in dealing with them, and measuring the results of the different means of screening. But my experience with the lights has been that bringing the chock to the outer edge of the wick does not prevent the light from being seen clear ahead of the ship and seen clearly.

3810. Although it must obscure the light which comes from the wick, considering it cuts it off?—How the light gets there—well, I was going to say it was really no concern of mine, but the fact that is does get there is quite apparent to me.

3811. With regard to the fine screening. Does not the yawing of vessels have very much the same effect at sea as coarse screening?—I presume by coarse screening you refer to the angle across the bow?

3812. Yes, I mean that; say a quarter of a point?—If you want safety in dealing with another ship you want fine screening, because you cut off your light then, and you show a ship at once what side she is on. As far as the rest is concerned, you must leave it to the seamen in charge to judge what is a sufficient distance from another vessel to keep clear of collision or anything approaching danger.

3813. The Board of Trade contend that the object of coarse screening is that two vessels approaching one another slightly on one bow will show both lights in sufficient time to enable them to port their helms in good time to keep clear of one another; what do you think of that?—I am afraid that idea of the Board of Trade with regard to port helm has been given out in such a way that a great many seamen—they are getting rid of it now to a very great extent, but up to a few years ago it was a very prevalent idea of a great many seamen that you always had to port. It is a bad thing to inculcate into a seaman's mind that he has to port, because you must always take into consideration the dangers of navigation; in the other vessel it may not always be prudent to port, and in many cases the Board of Trade in their instructions have put into the minds of many seamen that if they do not do that they get into trouble—that they will be wrong when they do not—in fact, practically, they are told whatever they do different to that it is wrong, and their minds are biassed, which is not a good thing.

3814. Suppose two ships are approaching each other, and you saw two lights on your starboard bow in consequence of the other yawing, what would be your duty to fulfil the law?—Well, I presume that you also would be showing your green light. Both ships would be showing their green lights to one another.

3815. Yes, both green and red, both lights in consequence of yawing?—Of course, as soon as the red light became visible with ships meeting end on, or nearly so, it is your duty to port.

3816. And coarse screening, you think, makes vessels cross each other's bows unnecessarily so as to fulfil the law?—Coarse screening does this. Two vessels have one another on the starboard bow, narrow, each seeing the green light of the other; one vessel says, "We are "going rather too close, I will starboard," but just as he is in the act of starboarding he has yawed a little under his port helm, perhaps, and shown his red light; the vessel opposite to him has seen that red light and ported. Here is one vessel acting under

the influence of a port helm and the other vessel under the influence of the starboard helm, and it is just a question of sea room whether they come together.

3817. Then do you think by fine screening the danger would be reduced?—I do. In fact, I have never seen that danger previous to this Order in Council, where we have been compelled to screen the lights across.

3818. Are you aware that the majority, perhaps, of ships were screened to more than 4° before this Order came out?—No, I was not aware of it. I am sure that I should be very chary in believing that such was the case.

3819. Because I think we have it in evidence?

(*Chairman.*) I think the evidence on the whole has become very doubtful. There are many cases, no doubt.

(*Witness.*) Are there any of the large lines out of Liverpool or elsewhere?

3820. (*Rear-Admiral Andoe.*) I could not say; probably they are more finely screened from the evidence we have?—Well, from my own knowledge, going through the Board of Trade surveys, and the entire absence of attention to the light screens and everything connected with that portion of it, I should be very doubtful of any statement that was made by Board of Trade surveyors as to lights being shown at a larger angle previous to that Order in Council.

3821. Is it within your knowledge, and not only of your own knowledge, but the knowledge of the gentlemen you represent, that the checks have been reduced as a rule in consequence of the Board of Trade new regulation?—That is the universal experience.

3822. You said just now that the White Star Line steered particularly well, I think, did you not?—Yes.

3823. Can you give me any reason for that?—Well, they are fine line ships, and long ships, and you invariably find such ships as that steer better than others.

3824. Do they steer better than the P. & O. steamers, or the Cunarders?—I have no knowledge of those ships; but in one ship of the White Star that I was in, the "Celtic," we ran for seven consecutive days without taking observations, and we found by dead reckoning and observations that there was only a difference of a mile in the distance. You may judge what sort of steering that means to arrive at that conclusion, but it was a notable instance The next day we made the Irish land.

3825. Regarding the position of side-lights to the masthead light, I think you said that you preferred them abaft the masthead light?—Certainly.

3826. Do you think that a better position than immediately below the masthead light, that is to say, immediately in a line with the masthead light?—I think there can be but one worse position than being in a line with a masthead light, and that is before it.

3827. (*Mr. Ismay*) You say, Captain Wade, that you represent the Mercantile Marine Service Association?—That is so.

3828. And that you have in all 3,000 officers and engineers?—Yes; but we have very few engineers.

3829. Chiefly officers?—Chiefly officers and masters.

3830. Do you know if there is any section that is in favour of the 4° screening?—I have never heard anyone express an opinion in favour of it.

3831. Might I ask then what has given rise to the strong feeling on the part of your association against the 4° screening?—The danger of it.

3832. Do you think that the angle should be calculated from the outer edge of the wick?—That is my impression.

3833. Would you take an oil lamp as a standard?—I would take an oil lamp as a standard.

3834. Why?—An oil lamp shows better than an electric light; in very clear weather electric lights show clearly, but there is no amount of refraction from the electric light, if you might use the term; they do not fulfil the conditions of a side-light as well as an oil lamp does. In hazy weather they become obscured very quickly.

3835. And you would take an ordinary lamp such as would pass the Board of Trade survey, I mean the improved survey?—Yes. I should certainly like to see the lamps very much improved in character, so that it would be a lamp that you could rely upon, and I am not in favour of anything that would stop further improvements in lamps. I would like to see a high standard below which you could not go; anything above that of course I should not mind.

3836. I suppose, as a matter of fact, with the screening of the electric light you have a finer angle than you would have with the other light?—I should think we would.

3837. On account of its being more powerful?—Yes, it cuts cleaner.

3838. Do you see any reason why the same conditions should not apply to the rule of road at sea by night as by day?—I do not just follow you.

3839. Well, in daylight of course you have got the hull of the ship, or the ship herself, to indicate her course; at night you have only got the lights. What I wanted rather to get your opinion upon was as to whether in the screening you want to get as near the condition of daylight as possible?—Those are my views entirely; that is, the masts in line in the day, and the lights in one at night.

3840. And to prevent the complication which you have described to us as so frequently arising under the new condition of things?—Precisely. There is just one explanation I would like to offer and that is, that it is not alone the ship that you are primarily dealing with that the screening of the lights becomes an object of danger and a condition of danger to, but you have a number of other ships on either side of you. A small alteration in your course, if your light shows across the bow, may make it visible to a second ship, and an alteration in your course to avoid that vessel may make it visible to two or three more, and vessels under various conditions, and it leads you into a very dangerous and difficult position with regard to the first ships you saw; what you did in dealing with those may have been perfectly right, and when you come to be dealing with several other vessels it alters the conditions and then the port or starboard helm may not do; it may then be "reverse full speed," and in dealing with that my reversing full speed may mislead these other ships again and place me in a position of danger with them.

3841. You want to avoid confusion?—I want to avoid confusion.

3842. In answer to Rear-Admiral Andoe you said you were in favour of the side-lights being placed abaft the masthead light?—Yes.

3843. For the reason that you got an earlier indication as to the movement of the ship?—Yes.

3844. Then what do you think of the side-lights being put into towers at the end of the forecastle deck?—I think it is the worst thing you can possibly do to put light towers on the forecastle deck.

3845. The after end, of course, you mean?—Well, the forecastle deck of most modern ships is before the foremast, and you then have your lights in a position forward, as a rule, of the masthead light.

3846. And that you do not approve of?—No, that is bad.

3847. Would you go so far as to prevent them being placed there?—I would if I could.

3848. You think it is a source of danger?—I do.

3849. And they are more likely to be intercepted by spray, or gear, or tackle?—It is a bad place for the lights to start with for working if you are in a fast ship. I have seen it in one of your own ships in the Atlantic. I have been three nights and we could not get our light to burn amidships in the vessel, and we never put a light on for three nights, simply because the force of the wind put them out as fast as they were lighted, and the only thing we could fall back upon was to keep them in the side house, and the masthead light in the forward steerage ready to pull up in case anything was seen.

3850. And that was a bridge which was high out of the water?—You recollect perhaps the occasion of [illegible] we lost [illegible] in the "Celtic," which took 14 days, when we lost half the bridge; and everything that would break, I think, did break; still we managed to get through; but upon that occasion what chance would you have of placing lamps on the forecastle head when the very rails were cut off.

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3851. You speak of Harvie's lamps; have they a good reputation?—With the exception of Chance, of Birmingham—the makers of the lighthouse apparatus—they are best I have ever seen.

3852. Are they largely used in the coasting trade?—We use no other, and all the better class of Channel boats use them.

3853. And you wish the Committee to understand that you are clearly of opinion that the finer screening is in the direction of greater safety, and would be acceptable to the mercantile marine?—The finer you screen the more safety you insure. That is our position, up to a certain point of course.

3854. That is, parallel to the keel?—Yes.

3855. (*Chairman.*) What do you consider would be the limits within which "nearly end on" would apply?—Well, "nearly end on" is a term in daylight, when you can just see daylight through the masts and funnel.

3856. You would not consider "nearly end on" to mean more than that?—No.

3857. Translated into points and degrees, what would that give you; supposing a vessel is 5° on the bow would that be nearly end-on, do you think, or 3° or 1°?—Well, I should say about half a point. About five degrees would be nearly end on, of course. I say it advisedly, because you must always take into consideration the conditions of the weather. If the weather were rough, and you were steering wildly, you would then take care that you were not going within more than a reasonable distance of a ship, that you would have plenty of room to manœuvre; but in fine weather, when the vessel is steering well, of course you could safely go closer, and in that case you would interpret it according to the condition of the weather.

3858. I mean as a matter of real practical steering, supposing you were steering by day, and you saw a vessel approaching, within what limit of degrees or points or quarters of points on your bow would you think it right to port; in what position do you think the rule that you are to port would apply?—I should say about 5°, about that; I have never taken the angle. I have not put a section pointer on the angle and taken it, because you must entirely use your own judgment upon the conditions under which you are working, and if you see whether you are going well clear of the ship, if you maintain the course or not, you act accordingly.

3859. (*Capt. Castle.*) I understand your evidence to come to this: If you are approaching another ship, and can see a green light a little on your starboard bow, you starboard a little to give her a wide berth; and when you are approaching each other, she with broad screening, and you get the glimpses of her red light, you port, and throw yourself right across the path of the other vessel?—Yes. You see at night it is no use a man saying he believes that ship is going clear. When you see a red light it is a red light, and you do not know whether it is coming exactly at you end on. You say if she is closely screened as in a foreign ship she is coming straight at you; if she is a British ship and has got squinting lights she will probably go clear.

3860. But you do not know that?—No, you cannot know that. You do not know how the vessel is screened, nor do you know how she is coming at you; therefore you must simply interpret it upon the rules; if it is red the regulations say you are meeting ships when you see the two lights, and you must port. You do it, and perhaps she has been starboarding, and it only closes them. On a clear night, when I have been in charge of the deck myself, I was very near a collision in an instance such as that, and had it not been that we both kept our helms hard over, and the other ship took a round turn, there certainly would have been a collision, and a very serious one.

3861. You had therefore to manœuvre?—Being close together with the red light open.

3862. (*Mr. Bolam.*) In one of your notes on page 4 of your evidence you say: "I have frequently met "steamers in the early morning, and on clear moon-"light nights, when I could see the vessels' hulls plainly, "and that they were heading in such a direction as "would go clear of us, but at the same time both "side-lights were plainly visible." Will you kindly say whether the date you were referring to is after the 4° Order in Council or before?—Yes, it refers to the period after the Order in Council.

3863. Then in the next paragraph you say: "Lamps "should be screened to the outer edge of the wick, and "be of uniform power." What do you mean by uniform power; do you mean that the lamps provided to all ships should be of equal candle power?—No, the paragraph is subject to be misunderstood. I think what I really meant to convey was that there ought to be a high standard of power, below which no lamps supplied to a ship ought to go. A ship might be supplied with lamps of a greater power.

3864. Will you kindly give me the names of the ships in your company which were screened so that the chocks came fore and aft of the outside edge of the wick. There were 12 of them, I think you said?—The "Dunbrody," the "Reginald," the "Lara," the "Commeragh," the "Ardnamult," the "Creaden," the "Vandeleur," the "Tintern," the "Shannon," the "Flying Huntsman," and the "Mermaid."

3865. You approach this question from what I will call the opposite extreme, that is to say, your wicks were as much cut off as they possibly can be when the chock comes to be outside?—To the outside edge, yes, I presume it would be so.

3866. And are you quite convinced in your own mind that even with the chock coming to be fore and aft with the outside of the wick you can see the full light of your lamp ahead of the lamp?—I think you see a light quite good enough for all practical purposes ahead of the light.

3867. But not necessarily the full light?—As I said before, I am not up in optics, and I could not say from a scientific point of view.

3868. Your own experiments were only carried out to 600 feet distant from the ship, and not beyond?—Yes, that satisfied me as to the correctness of the view that I held, that these lights were perfectly visible at that distance.

3869. At 600 feet?—Yes.

3870. In coming across from Waterford to the Bristol Channel you must often cross your own vessels going the other way. Have you often met your own vessels end on?—Frequently.

3871. And at what time?—Invariably at night.

3872. And both of you with your lights screened so that the chock came to the outside of the wick and you had no difficulty in avoiding a collision?—We never had the slightest difficulty, we could always see the two side-lights.

3873-4. So that, in your judgment as a shipmaster, safe navigation at sea is consistent with the chock coming fore and aft with the outside of the wick?—That is my view; and, in confirmation of that, if I might say so, it is in the channel that the great use of lights takes place; it is there that you get a number of vessels, and that is why a light wants to be closely screened. Because in dealing with these vessels many times you have to deal very closely with them. It is imperative, you cannot help yourself, you must pass them very close, and therefore, if your lights are not screened closely, they mislead and tend to danger.

3875. Do you place much dependence upon the rhyme, "Green to green, red to red, perfect safety, go ahead"?—I never thought there was perfect safety at sea. I believe in the man who said the sailor's life was an imprisonment for life, with the additional danger of being drowned.

3876. (*Mr. Scrutton.*) You have spoken in this paper of meeting several vessels; is it a common practice for you to meet three or four vessels sufficiently near that you have to deal with them *en bloc*?—Yes, it is a thing which occurs every passage, and not at one time on a passage, but it frequently occurs at five or six different periods of the passage.

3877. Could you explain a little more fully your views as to the source of danger when the light is at the end of the forecastle?—My view as to the placing of the side-light is that by bringing it abaft the masthead light so as to form——

3878. But that is not my question. My question is this. What is your objection to the lights being placed at the after end of the forecastle?—Well, if you assume that the forecastle comes to *there*, you have the masthead light on the mast *here*, and your side-light is *here*. If I might use the term, that is an

unnatural position for the side-lights. You look at that, and the first thing that strikes you is that vessel ought to be going the other way—that is the first thing, you think, as a seaman, but the light tells you she is not. You know the lights ought never to be placed in a position to cause distrust in a man's mind; it ought to assist his mind rather than cause distrust; and every seaman I have heard unhesitatingly condemns those lights placed before the foremast

3879. Then I suppose that you recognize that in a vast number of ships it is the common practice to place them with the lights in lighthouses, particularly in modern times?—Yes, I think I can give a very fair reason why that is done. Probably, a third of my time is spent in shipbuilding yards looking after new work and repairs that we are doing. I have noticed that the Board of Trade have entirely set their faces against lighthouses being placed amidships or anywhere amidships, to the extent of refusing to pass them (upon what ground I do not know) and that has necessitated this, that the builders invariably say, "Well, just let these " be put forward—it is a very good position, and there " will be no trouble with the Board of Trade," and by that means they bring a pressure upon the owners about putting them there. Many of these owners are not practical men or have not much experience of ships themselves and they accept it, as the Board of Trade say that is the position, and in fact they go further and say they will not pass them if they are put amidships.

3880. If you meet a vessel two miles off, can you tell by the look of her lights, do you think, whether they are on the forecastle or amidships?—It is entirely dependent upon the direction in which the vessel is going.

3881. Suppose she is meeting you?—That is the only position, when they are meeting, in which it is of least consequence where the lights are placed, but in any other position it is of the very greatest consequence; and there is further this, that as you draw towards one another, then you find the value of the angle between the masthead light and the side-lights; when it is amidships it immediately then shows the position whether it is one of safety or one in which you are going to pass too close.

3882. But if you are not meeting a vessel ahead then you will only see one light?—Precisely.

3883. In your evidence you say that the utmost precaution was taken that the side-lights should not be seen across the bow in the early days. What is your justification for making that statement?—My justification has been my own observation of it.

3884. Then do you mean by the owners in fitting or by the Board of Trade in passing?—In the first place the side-lights were fitted by the builders and the owners' surveyor or superintendent, whoever he happened to be, and they took care that these lights were properly placed.

3885. It was a matter which was before them very distinctly to avoid their being seen across the bows?—I can only speak for myself in dealing with those things. It has always been my care to see that those things are carefully looked after.

3886. Then, again, you say the Order in Council has so altered the language of the International Regulations that the words "shall not be seen across the bows," which every sailor knows to mean by other ships. Are you quite clear that a sailor in dealing with those words would say that does not refer to "my ship," but refers to what the other ships see—that is your explanation?—There can be no doubt about it; it is a term used by seamen, when a man speaks of a vessel crossing his bow he refers to something that has crossed his path ahead of the ship. He does not speak of the bow of his own ship. He reports everything as off his bow.

3887. You made use of the expression, "So as to be " visible from right ahead of the light." The regulation does not say "from right ahead of the light?" —it does not say of the ship either; it just says "right ahead." Of course, no doubt it is open to argument whether it means ship or lights, but it is our belief that that should be "right ahead of the light," and then you would get the lights converging ahead of the ship.

3888. (*Sir E. Harland.*) Referring to this matter of lighthouses and side lights being placed on the after part of the forecastle, do you think that it was with the object of keeping such lights clear of being blinded by the foretack, say, or canvas of the ship?—No. I do not, because in the majority of instances it applies to steamers; very few steamers nowadays have any square canvas at all, and if they have, the foot of their sail is amply high and above any lights, and it would be abaft such lights as those.

3889. Then do you think at the present time there are more steamers fitted with those lighthouses than steamers fitted amidships?—I do not; I think the other system of placing them amidships prevails.

3890. (*Mr. Ismay.*) In what proportion, 10 to 1?—Well, that is a very large proportion.

3891. Well, 6 to 1?—I dare say it would be 6 to 1.

3892. (*Sir E. Harland.*) Then so far as sailing ships are concerned, you do not think that where that is so it is with the object of keeping those lights from being blinded by the canvas?—Of course, that argument applies with more force to a sailing ship than to a steamer; but my view of it is this, from the actions I have seen of the Board of Trade inspectors themselves, that those lights are placed forward so that they should not be seen on the ship herself, for if the same lights were put amidships and screened to a 4° angle, they would both be visible on the forecastle deck of the ship itself; it is pretty well understood that this would take place and my own experience shows me that it does take place.

3893. Then how do you account for probably all the Transatlantic steamers having lights fitted amidships, or at the end of the captain's bridge well towards amidships?—I think that is right.

3894. But is not that a long way aft of the forecastle?—Yes, and it is in the very best part of the ship, and there are many reasons for having them there: in the first place, they are under the eye of the officer on the bridge and he can see whether they are burning dimly or whether they are alight, and can have them replaced, and they are clear of all the heavy water which comes forward. When those glasses get hot in a heavy sea they split at once.

3895. But if you say the lights are placed on the forecastle with the object of preventing their light being shed on the forecastle deck, would it not be more so if you had them placed at the ends of the captain's bridge?—They would shine on the ship more. But that is not our fault. We do not want it. We are compelled to do it.

3896. Is that another objection you have to coarse screening, that the coarser they are screened the more likely it is the light will be shed from the side-light on to the forecastle of a vessel, but where the lights are placed amidships that would not be so?—Well, that is rather a queer question to answer; in this way, that the light being placed amidships, it does not take away from its efficiency because you choose to throw it across the bow, to allow the light to shine on the forecastle deck. As I said before, that is not our duty. We cannot help it; we are made to do it. If we were allowed to screen the lights as prudence dictates, we would screen them in such a way that they would not interfere with the vision of the officer.

3897. You are in favour of placing the side-lights abaft the masthead light.

3898. Would you be disposed to recommend any particular angle relatively to the masthead light?—Well, I find in some of the cargo ships of the White Star and the Leyland line, where there is a very great drift between the masthead and the side-lights, it is very easy to distinguish how the ship is heading.

3899. Would you go so far as to make a regulation or a very strong recommendation that all ships should have their side-lights so placed?—I certainly would.

3900. In such a case would you then recommend each should be at a given angle relatively to the other?—Well, it is not always practicable to place a light within 6 or 8 or 10 feet of where you would like it; the conditions of the structure of a ship and the deck erections and the rigging come in so that what is possible in one is not possible in another; but in practice, and for all practical purposes, there would be no doubt that lights could be placed on ships in such a position as I say.

3901. Assuming that the side-lights were placed at an angle of 45° to the masthead light, would you be able to recognise pretty precisely in what direction the vessel was heading: if, for instance, you were

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going to cross her bows?—It would give you the best indication that lights can show under those conditions.

3902. If, for instance, the vessel is so placed that you would only see the masthead and port light, do you recommend that as the vessel approaches more nearly end on to you the angle between the port and the masthead light should gradually become less?—Precisely.

3903. And it is the difference between those angles which would enable you to form an opinion as to what course that vessel was steering?—Yes, you either lessen or increase the angle according to the direction in which the ship is going.

3904. And that is what you would be glad to see gradually adopted?—That is so.

3905–6. You referred to both the lights being visible at 96 feet ahead when screened parallel to the keel?—No. That has been since they were screened to the 4° angle.

3907. When screened to the 4° angle, do you think you saw anything of the light itself, what I may call the visibility of the wick; at 96 feet: or do you think it was the refracted rays from the lens?—Well, as I said before, I am not well up in optics, and really upon that point I could not say anything; only I saw her red and green light.

3908. Have your vessels what are called dioptric lenses?—Yes.

3909. You are not referring to the fish-globe plain lens?—No. Dioptric lenses, with the larger one in the centre.

3910. Are you in favour of that lens in preference to a fish-globe lens?—I have had no experience of what you term the fish-globe lens.

3911. It is perfectly plain?—Oh, no; they are no good.

3912. This is what is known as the fish-globe lens (*producing a lens*)?—Oh, no; we found that those lamps have not nearly the power of the dioptric.

3913. But would you say that was due to the lens, or the strength of the wick or the flame?—No, I think it a less powerful lens. The dioptric lens refracts the light so much better.

3914. And brings it more generally on the level of your vision?—Yes.

3915. You referred to some lamps in one of the transatlantic steamers having been blown out by the wind; is that an inherent defect in side-lights?—It is not. It was an exceptional circumstance. We had the worst weather I ever experienced at sea. We had a hurricane.

3916. Then the smallest crevice would let it through?—We stuffed them with waste, and we put canvas covers on. We did everything that a sailor could, and if anybody could think of anything more than a sailor can at sea he can go and do it.

3917. It was under very exceptional circumstances then?—Yes, you see you can stuff a light up so that it would not burn for want of air, and you have to leave a certain amount for ventilation.

3918. And it was probably through the apertures which supply the fresh air and let the foul air escape that the wind put out the light?—Yes, these were the best lights, trimmed in the best way, placed in the best way, and everything of the best, and everything was done that could be done.

3919. The Chairman asked your opinion as to screening from the outside of the wick. Now *here* is a plan of an ordinary lamp, and the wick *here* stands athwartships; do you really mean that you are in favour of the chock projecting so far from the face of the screen as to reach out to the outer edge of the wick, assuming, of course, that the screen is parallel to the keel?—Yes, certainly.

3920. Then I think you replied that directly ahead of the lamp you were still able to see the full strength of the flame?—I could see both lights clearly.

3921. (*Rear-Admiral Andoe.*) At 600 feet?—At 600 feet.

3922. That is a very short distance?—It is not far.

3923. (*Sir E. Harland.*) You referred to the steering of the "Celtic"; are you aware that the "Adriatic" and the "Celtic," which are, perhaps, sister ships, are probably the longest ships afloat for their beam?—Yes, I am aware of that.

3924. With reference to their steadiness in steering?—Yes, I did not couple the two things together.

3925. But of course it is well known to seamen that narrow long ships steer better than broad short ships?—Yes.

3926. That is, steer steadily?—Yes.

3927. (*Captain Castle.*) And not being overladen has a great deal to do with steering also?—Yes, no doubt that has a good deal to do with it.

*Mr. D. Tamlin.*

Mr. DAVID TAMLIN called and examined.

3928. (*Chairman.*) I think you are a Swansea pilot?—That is so—Swansea and the Channel.

3929. Do you belong to the Pilots' Association?—Yes; I am a member of the executive.

3930. Is that an association of Swansea pilots or Bristol Channel pilots?—No, the United Kingdom Pilots' Association. We have an association round the coast embracing the whole of the United Kingdom. Our head office is at Bristol. We hold our conference on the 26th and 27th of next month at Cardiff. It is moveable every year.

3931. Are the views you are going to express your own views, or are they those of some body which has deputed you to express their views?—No, they are my own views, but we have talked the matter over in our boat at sea and in the pilotage office.

3932. What do you say as to this rule of screening to 4°?—Do you approve it, or not?—I approve it very much.

3933. Before the rule came into force, what was your experience as to what the actual screening of vessels was?—Well, I may say that we understood very little about it, speaking generally. My opinion was that dealing with the 10 points from right ahead (that is two points abaft the beam, and eight points, which make the 10 points), I always understood within my own mind that it meant right ahead of the ship, consequently there has never been any dark lane. That is my experience of it. The doubts are whether it was intended to be right ahead of the stern, or right ahead of the side of the ship, but I never had that idea.

3934. You understood the rule to mean that the full light should be seen right ahead of the ship, that is to say, right ahead of the stem of the ship?—Undoubtedly ahead of the stem. Right ahead of the ship is right ahead of the ship, from the stem head—not from the side of the ship. It has proved itself to be right in my experience.

3935. Then what would you understand to be the meaning of the rule as to the distance right ahead of the ship at which both lights should be seen?—Prior to the present rule?

3936. I am really asking you for the moment as to your understanding of the meaning of the rule. You were saying you understood the rule to mean not right ahead of the lamp, but right ahead of the stem of the ship. I want to ask you at what distance you place that—is it at the stem itself?—No, certainly not.

3937. Then at what distance?—I could not give you the distance. I was awfully astonished when I came to read the reports of the surveyors. It was given in answer by the President of the Board of Trade, where he says that prior to the adoption of the 4° angle—there were some, I think, from the various large ports—40 or 50 per cent. of the ships were really more than 4°—such as 6° or 7° or 8°. Consequently those vessels were certainly angled at a dangerous angle. Therefore, where there was no standard I could not possibly say the distance ahead that we could see the light. There was no standard really.

3938. That is not quite what I was asking you. You have said your view was that the words "right ahead" meant right ahead of the stem, and not right ahead of

the lamp. I wanted to know whether you understood the rule to mean right ahead of the stem at the stem, or right ahead of the stem at some distance from it?—Undoubtedly, at some distance.

3939. Have you considered at what distance from the stem the rule meant?—No.

3940. I am not sure whether you quite answered my previous question. Before the rule came into force, if you had any practical experience, what was the angle of screening that was usually employed in your judgment, apart from what you may have heard—vessels you have had to do with yourself?—Well, I should think about 5° or 6°.

3941. You think they were screened over 4°?—Yes. I have been in command of a vessel myself before becoming a pilot, and I recollect the time the new side-lights came out; the size of the lamps was increased; they had to go through that ordeal, and were fitted up afresh; and when the Board of Trade surveyor set them up I took particular notice, and I should fancy the angle given across the bow was somewhere about 5° or 6°.

3942. How long have you been a pilot?—23 years in the pilotage service.

3943. At Swansea?—At Swansea.

3944. Have you commanded a vessel or been on one before?—I was in charge before coming as a pilot.

3945. When this rule came out in 1892 you were then a pilot?—Yes.

3946. So I do not follow about your having been in vessels and seen the chock altered for the purpose of altering the screen. Would that be 23 years ago?—Oh, fully; 24 years ago. Of course there was no scale laid down then.

3947. Would you tell me why it is that you think the 4° is a good limit for screening?—Well, I consider it a very safe angle, for the purpose of navigating in narrow waters particularly.

3948. Then in narrow waters you approve of what you call crossing lights?—Certainly, you are bound to have them. You call them crossing lights, but I cannot see that they are crossing lights, only to a certain extent.

3949. Then is it your judgment that lights that do not cross in narrow waters are less safe than lights that do cross?—They are dangerous, undoubtedly, in narrow waters for many reasons.

3950. Of course you are aware that that is contrary to the opinion of a great many people?—I cannot help it.

3951. But you are saying that knowing it is contrary to the opinion of a great many people?—Oh, yes.

3952. But it is your deliberate view that, in narrow waters especially, crossing lights to the extent of 4° are safer than lights that do not cross?—Undoubtedly they are, in narrow waters. I might say that vessels then are solely in charge of pilots, so the question is really a pilotage matter, because in narrow waters we steer our vessels very accurately; we have no room to deviate, therefore we pay particular attention to the course we are steering. Of course, in ocean steering you do not steer within a quarter of a point one way or the other, there is plenty of room there; but in narrow waters you would pay particular attention. Sometimes they are as close as 2°. Therefore, I say in narrow waters the 4° angle is the safest angle.

3953. But even in narrow waters you would like to know how the vessel was approaching, and you know that you would see all three lights of a vessel although she was 4° on your starboard bow?—Oh, quite so.

3954. Then you think the rule of porting ought to apply equally in narrow waters?—If necessary. You have to depend upon whether the river is clear. In coming into harbours we cannot always depend upon the porting business.

3955. Tell me why it is you think that 4° in narrow waters especially is a safer thing than 2° or any other angle. Why do you desire that the lights should to a certain extent cross more than they need?—If it is 2° the distance at which they would converge would be too great, consequently it would produce a dark lane, which we cannot afford to have in narrow waters.

3956. Then your idea is that if 2° is adopted there would be a dark lane ahead of the vessel?—To a certain extent, where the lights would converge to a 2° angle: that would be too much for narrow waters.

3957. You mean by the dark lane, I suppose, the space in which neither of the lights would be seen?—Yes.

3958. Have you any idea in your own mind what distance that dark lane is actually in length when the lights are screened to 2°?—I should think about 14 times the breadth of the ship.

3959. That is the impression you have in your mind?—Yes. I have drawn up the account in my own way.

3960. What in your judgment would it be at 4°?—7 or 7½ times the breadth of the ship, I think. It ought to be that, I should think.

3961. And you think it is important that the dark lane should only be seven breadths of the ship and not 14 breadths?—Undoubtedly, more especially for narrow waters. If we had it shorter it would throw the light across the bows.

3962. Is there any other ground which you would like to put forward as a reason why you think 4° is a better and safer thing than, say for comparison, 2°?—No, I cannot see that there is any, but I should like to know if you could possibly determine what would be safer than 4°. If any person can tell me I would willingly adopt it.

3963. I am suggesting a comparison between 4° and 2°. Do you think 4° would be safer and better than 2°?—Oh, undoubtedly.

3964. You have given me one reason, the dark lane—which I fully appreciate—is there any other reason why you say 4° is safer than 2°, for example?—No, I do not see anything at present more than that 4° would be a safe angle because the lights would converge at a reasonable distance ahead of the ship, and I think the faint tinge of the light after the divergence would be very trifling outside on either side; it would be a matter of no importance in my opinion.

3965. I do not know if you are at all aware of the distance on each side of the centre line to which the lights actually show when they are screened at 4°, at a mile or two miles from the ship?—Nothing of the sort would run a mile.

3966. Is it your impression that at a mile from the light that would be so?—No, it is my impression that it is considerably less than that distance where the convergence takes place from the ship.

3967. I am not quite sure whether I make myself clear. At a distance of a mile from the ship, have you formed any impression what distance on each side of the middle line the green and the red light are seen if screened at 4°. (*Describing on the plan*)?—That would be a very faint light; it would be, as we say, the starboard light crossing the bows. The convergence is *here*. I should think it would not be a quarter of a cable's length before you would lose it altogether, not more than that, if you were approaching him. You would very soon come up and have the light in view, so that you would be able to decide what you were about to do.

3968. If that is about 150 feet, screening to 2° would be something less than that of course?—If screened to a 2° angle, quite so.

3969. What I wanted to ascertain was, whether you attach any practical value to the lights not crossing to that extent. Do you think this distance would be less when the lights are screened to 2°?—No, I could not see any difference at all, but I consider that 4° is the proper angle, unless someone has something better, and more especially in narrow waters. Of course what we say is this (there has been some controversy about it), 10 points of the compass are 112°, that is from right abead; but I always understood that 10 points of the compass to come in and meet in the centre of the vessel. The only difference I see between the old regulation and the new was that the words "of the ship" were added. I always considered that it meant right ahead of the ship.

3970. May I take a mile as the distance; if the full power of the light were seen right ahead of the ship at the distance of a mile, would that satisfy the rule?—I should say so, amply; there would be ample time to do anything in that case.

3971. As long as you see the full light right ahead of the stem of the ship a mile distant, that in your judgment would be sufficient?—Yes, or even less; but as I say in narrow waters we will not allow a vessel to yaw about, consequently we want to

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pick up one light; if a vessel yaws about certainly we can see both lights when coming end on; but when a vessel is in charge of a pilot we steer very closely; we pay particular attention to the helm because we have no room to deviate; if I deviate a quarter of a point I am ashore in our channel, which is only 250 feet.

3972. Does that express generally the view you wish to put before us with regard to the rule, or is there anything else you wish to say with regard to the 1892 rule?—Nothing. I do not see that I have anything to say upon the subject, more than that we heartily approve of the 4° unless somebody shows us something different and I cannot see anything safer or better than the 4° especially in our business; you might get no degrees at all at sea where a vessel has a chance to yaw about, but working in narrow waters it is most important that it should be 4°. I think that would meet all purposes. If you give a greater angle the light will show across the bows, and if you give it less it will shove me perhaps in the dark lane, and I shall have nothing but the dark lane because steamships are very broad; the common colliers are 40 and 45 feet beam nowadays; that is quite common.

3973. (*Rear Admiral Andoe.*) Your object you say is to continue a straight course in steering up the narrow channels, is it not?—That is it.

3974. Not to have to go zig-zagging about?—That is it; that is the business of the pilots.

3975. And you think that by screening a light to 4° rather than to a finer angle enables you to obtain that object?—That is so.

3976. Supposing you are going through a narrow channel and you see a vessel half a point or thereabouts on your starboard bow coming down showing you both lights, what would your duty be?—If distance would permit, to port.

3977. And cross her bows?—Yes, show her my red.

3978. Supposing the lights were screened so as to throw a light right ahead of the ship—by ahead I mean what you mean, some distance ahead—and so as to reduce the angle, then you would not see both lights?—No.

3979. But only the green light?—That is all.

3980. And consequently you would be enabled to continue your course along the channel without crossing one another's bows; do you see that?—No, I do not.

3981. Would you mind looking at these models. Supposing *those* vessels were approaching one another each having the other about half a point on the starboard bow; if you are screened to 4°, which is nearly half a point allowing a degree of yaw, you would each see the other's two lights?—You would.

3982. And according to the law you would port your helm, and go clear of one another?—Yes.

3983. Supposing you were screened finer and you are still bearing half a point on the bow of the other, and supposing your light is screened so as to come right ahead of the ship like *that*, and converge at a considerable distance, and yet not leave a dark lane altogether, if that was the case, you would not see other's port lights but only the green light, and consequently, you would continue your course like *that*, would you not (*describing*)?—Probably that might be the case.

3984. Keeping away a little bit to give more room?—Yes.

3985. So that in that case the finer screening would enable you to keep a straighter course than coarse screening?—Yes, but the question arises very much then whether I should have room in a narrow channel to give him a broader berth.

3986. If you had coarse screening you would have to alter your course more to get across?—Not necessarily, because it is laid down, and every man would know what the uniform angle would be; he is accustomed to it and he would know the distance he was off from the other by general practice.

3987. You mean to say that even though you saw the two lights you would not cross the bow?—Just so.

3988. Therefore, you would not obey the rule of the road?—Oh, you must not do that.

3989. Therefore, if one did, and another did not, and you came into collision you would be found in fault for not doing it?—Most undoubtedly.

3990. Therefore, if you had fine screening, and did not see the two lights, you would simply continue your courses and pass one another on the side you found yourself originally without crossing one another's bows; you might do that?—It would be possible.

3991. Because there would be no reason for crossing the bow?—Yes, but it is not necessary; the ship is end on, or nearly so.

3992. Half a point?—Well, even half a point I would port if I was far enough off, giving him time to port also.

3993. If you did not see the two lights, supposing you only saw the green light of that vessel, would you port across her bow?—It depends upon the distance he is away from me, and the angle he is upon. You can always tell pretty well the angle a vessel is upon.

3994. But half a point angle?—Well, that is the angle she is off my starboard bow—half a point.

3995. And you only see the green light?—Yes.

3996. Do you think you would port your helm in that case to cross his bows?—Well, if he was a mile away, and I wanted to put myself in the channel ——

3997. But I am speaking of merely clearing this vessel. I mean in an ordinary channel, where you are passing each other?—I would myself go up on the starboard side of him.

3998. Would you be justified for purposes other than pilotage in crossing her bows if you only see her green light?—Yes.

3999. If you did not want to do it for pilotage purposes, but merely wished to clear the vessel, you would not do it?—Of course, I would port the helm and open out his port light, bringing him perhaps a point and a half on my port bow.

4000. But you would not do that unless you had pilotage reasons for doing it?—The reason simply is that I want to cross his bows.

4001. And to satisfy your own fancy?—To satisfy my own fancy. If he is a certain way off half a point is not much. If he was a quarter of a mile off me, I would say port and and show my red; if he was three-quarters of a mile and I ported a point or a point and a half, I would very soon open his port light.

4002. But you would not break the law if you kept green to green?—No, certainly not.

4003. (*Mr. Ismay.*) Do I understand you were in command of a steamer before you joined the pilotage service?—No, a sailing vessel.

4004. Then you have never been in command of a steamer?—No.

4005. Where was this sailing vessel trading to?—To the west of Ireland; it belonged to the Berehaven Mining Company.

4006. You never had any ocean experience?—Yes, I made six voyages to the west coast of South America in different capacities; as second mate.

4007. That was the highest position you got, second mate?—I was a master in the home trade and served in all sized ships up to the "Great Eastern."

4008. How long have you been in the pilotage service?—23 years.

4009. And 4° you say is a safe angle to screen at?—It is what I consider a safe angle.

4010. Is that screening from the outer edge of the wick or the inner?—The outer edge I should think; yes, the outside edge of the wick.

4011. Are you quite sure about that?—Yes.

4012. Have you tried it at all?—No, only common sense. I have put it on paper several times, and had a bit of controversy at the Chamber of Commerce some time ago at Swansea, and I fully explained it to the members, and there were some nautical gentlemen present; they quite confirmed what I said.

4013. You have given some thought to that matter?—Yes, I have fully thought it out and weighed the matter in my mind.

4014. Has no one attempted to show you that they could screen to a finer angle and be safer?—No.

4015. If they could you would adopt it?—Yes, if it was proved to me to be better than 4°.

4016. You seem to lay great stress upon 4° being safer in the narrow waters. Where are the narrow waters that you have spoken of?—All over the United Kingdom pretty well.

4017. But what is your pilotage ground?—From Nash point to 4 miles west of the Elvick lightship.

4018. As Rear Admiral Andoe put it to you, you would port your helm, even although you saw a ship's green light?—Yes, if I wanted to get the other side of him providing I was at a safe distance from him.

4019. Suppose that the vessels are so far apart (*describing*) would that not tend to considerable confusion?—I should take that into consideration.

4020. But in taking action you have regard to what others may judge of your action, have you not?—Yes, we have to do it in narrow waters and in entering dock; in fact, we are bound to do it in entering the harbour. There is the Prince of Wales Dock. Ships coming down the channel come down under a steady helm and we are bound to keep on the port hand.

4021. That is for pilotage reasons?—Yes.

4022. Have you ever gone on the stem head of a steamer to see whether you could see the light?—Yes, cruising round them.

4023. But on the stem head of a steamer of which you are pilot?—Not for the purpose of looking at the lights.

4024. You do not know whether or not you can see the lights from the stem head?—You ought not to.

4025. And if you did not see them, it would be a source of danger?—Undoubtedly it would be, from the stem head.

4026. (*Captain Castle.*) Your pilotage extends principally I think from the Mumbles to the dock?—The pilotage district is from Nash point to Elwick lightship.

4027. But you generally pick vessels up in the neighbourhood of the Mumbles?—Yes, and lower than that.

4028. You are never going at a high rate of speed—it is only a very short distance?—Not particularly, but I have been under a great rate of speed myself. I go to Liverpool to fetch round the West Indian Pacific Boats; they are long boats and steam quite 12 or 13 knots.

4029. Do you come round as a pilot in charge of them?—Yes, I have done that four times lately.

4030. But you are not licensed for that?—No, I am the local man to assist the captain.

4031. It is not compulsory?—No.

4032. Going into dock you are not going at a great rate of speed?—No.

4033. Going very slowly?—Four knots at the entrance of the Channel, and when you get up to the Bar you reduce the speed.

4034. That is after you get inside the Heads?—Yes, but when we cruise 40 miles west of Lundy, of course we have to drive at a good speed.

4035. But there is no risk of collision in the ordinary course of docking a ship?—There is a collision occasionally.

4036. But not ordinarily; it would not depend upon how the lights were placed. I am speaking of going into the docks after getting round the Heads?—Oh, certainly, you want side-lights.

4037. I say the screening does not come in then much?—Oh, yes, it would come in there a great deal, as other vessels are entering and leaving simultaneously.

4038. I am speaking of Swansea. You seldom or ever meet vessels coming out of dock the same time you are going in?—Oh, yes, there are three docks on the river, and they empty themselves simultaneously when you are entering. There are always ships going in and out.

4039. You are placed in the centre, with a dock each side of you; one dock on the right and another on the left?—Yes; all sorts of ships are moving about the harbour. Vessels leave simultaneously.

4040. Do you meet ships at night time?—Yes, right up to the entrance of the dock-heads. We could not get along with our work if that were not so, so we have narrow water in navigating.

4041. (*Mr. Bolam.*) Have you seen the Board of Trade statistics as to the angle of screening of vessels in the South Wales district?—Not particularly South Wales. I have seen those relating to Barry and Cardiff.

4042. Have you seen the chief surveyor in the South Wales district, Captain Chalmers?—I do not know him.

4043. And you do not know, therefore, that he has prepared a table which shows, if it can be trusted, that the angle of screening in that district has been enormously large hitherto, before the 4° instruction?—I do not know whether it is from him or whom. It was given in a reply by the President of the Board of Trade some three or four months ago.

4044. And it is your belief that the angle in that district formerly was more than 4°?—Yes, evidently, if the report is correct.

4045. And you have that in your mind when you are giving evidence?—Yes.

4046. Then in your view what the Board of Trade have done is to very considerably diminish the angle of screening by the 4° instruction?—Yes, to a safer angle.

4047. And do you think that that reduction was in the right direction?—Undoubtedly.

4048. It is only a question of argument as to whether they have reduced it sufficiently. You think they have?—Yes.

4049. It is that dark lane which you are in dread of?—Yes.

4050. You have also said, "We want to pick up the one light." Why do you want the angle at which you can see two lights across the bow made larger than necessary if you want to pick up the one light?—What I said was this, that where the lights converge, the faint glimmer that would show beyond would be very small, and you would very readily pick up one light if you were going towards the other ship.

4051. When you see another vessel in very narrow waters, when do you know you are passing safely—when you see both lights or one?—When I see one shut out.

4052. Why then should you prolong unnecessarily the time during which you have two?—It depends upon the distance that the ship is from me. If at no great distance, of course, I should have to be very prompt in shutting off one light; but if the ship is a long way off me, I am indifferent about it.

4053. Then, if you are in a narrow channel, and you have to shut off the light by turning your own ship a considerable number of degrees, there is just a chance as the water shallows of your smelling the ground?—Yes.

4054. And your vessel may take command of herself and turn right round, right in the centre of the stream, and get into collision?—Possibly so.

4055. Then is it not desirable in narrow channels that you should alter you own ship's helm as little as possible in order to ensure the safety of the property you are in charge of?—Certainly, in narrow channels.

4056. Then your view is consistent with the angle of side-lights being as small as possible?—Precisely.

4057. (*Sir E. Harland.*) Reference was made just now to the dark lane; have you ever when you were coming into port at close quarters with ships meeting you found yourself in the dark lane?—Never. I have found no dark lane.

4058. I presume you are including in that answer the period which has elapsed since the screening was limited to 4°?—Yes.

4059. Then if you have never yet discovered the dark lane, have you any reason to suppose that if the screening were finer than 4° you would come into the dark lane?—Yes.

4060. Have you ever tried the experiment yourself?—Yes, and extended it.

4061. Then at what angle would you say there was such a thing as a dark lane; you say there was no dark lane at 4°?—Oh, yes, there is a dark lane at 4° certainly.

4062. Then how near the ship must you approach before you actually find yourself within the dark lane

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with a 4° screening?—About seven to eight times the breadth of the vessel. That is how I worked it out.

4063. But did you work it out by actual observation, or only drawing it on paper?—Drawing it on paper, and I measured it myself.

4064. Then you have not tried it by approaching nearer and nearer until you found at last you were within the dark lane with a 4° screening?—No, if I drafted the like of that out, I would, of course, bring my experience to bear upon it in the position I was in, if I were afloat.

4065. But afloat you have not tried it?—No, I have not, for that purpose.

4066. Then from your experience afloat have you any reason to believe you would find a dark lane approaching a vessel ever so close with a 4° screening?—Yes.

4067. But you have only supposed it, you have not experienced it?—Well, I naturally expect it.

4068. But expectation and realisation are two very different things?—Yes, I do not suppose I have ever realised such a thing, because we should be getting so close, we should shut off one light before we got there.

4069. Therefore you think that with 4° screening as you approach the vessel you would get within the dark lane?—No, there would be time to shut off one light. The only way to do that experiment would be to get a small boat ahead of the ship, and that I have not tried yet. We go mighty close across the bows in our pilot boats—a great deal too close for some of them.

4070. And yet in crossing the bows of the ship mighty close you have not experienced the dark lane with the 4° screening?—No, I should want a small boat for that.

4071. What distance ahead are you contemplating when you speak of having a small boat in order to discover whether there would really be a dark lane or not?—Well, if she was on a very steady helm I suppose it would be about six or seven times the breadth of the vessel.

4072. Then, if you were nearer than five or six times the breadth of the vessel to the stem of the ship, you think then you certainly would find yourself in a dark lane?—I think so, if he was on a very steady helm.

4073. But you have not actually experimented in that way?—No, I question if I shall if I can avoid it.

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## Wednesday, 26th June 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Sir EDWARD HARLAND.
Captain HALLETT.
Captain CASTLE.
Mr. BOLAM.
Mr. SCRUTTON.

Mr. C. HIPWOOD, *Secretary*.

*Capt. W. Chapman.*

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Captain WALTER CHAPMAN called and examined.

4074. (*Chairman.*) What office do you hold?—Superintendent of the Royal Mail Company, Southampton.

4075. I think you have held that office since 1890?—Yes.

4076. You first went to sea I think in Mr. Green's ships in 1862?—Yes.

4077. Then you joined the Royal Mail Steam Packet Company in 1867?—Yes.

4078. And you obtained the command of one of the ships of that company in the year 1879?—Yes.

4079. Now, we want to ask your opinion about this present rule of the Board of Trade, which directs that the lights should be screened to an angle of 4°; what do you say as to that?—Well, I think it is wrong.

4080. Will you kindly give us your reasons, in your own way, why you think so?—Because ships first seeing each other's side-lights, not the masthead-lights so particularly, at comparatively short distances, nearly end on, but on slightly different courses, can see the wrong lights of each other, and be led to take action under different rules.

4081. To take action under different rules; will you just explain that?—One can see the other's lights as an end-on ship and the other can only see one light of the other ship.

4082. So that you mean, if two ships are approaching one another, the one that has the other on her starboard bow can see both lights, and the other can only see one; and you think would be a position of danger?—Yes; they would be led one to port and the other to starboard, which would bring about a dangerous position.

4083. That of course assumes that the two lights are not screened in the same way?—No, I think if the lights are both screened to 4° you could see it.

4084. That is just what I want to understand. Assuming the ships both to have their lights screened to 4°, I am not quite sure that I follow how you suggest it would come about that one might see one light and the other two?—If a ship is, say, slightly on the starboard bow—within a quarter or half a point on the starboard bow—almost ahead of another, she can be in both rays of the first ship's light, but at the same time she can be showing only her own starboard light. I do not think there is so much danger arising on clear nights, when the ships would see each other at a distance, as when in, say, comparatively thick weather one of the ships sees another's side-lights half a mile off, having first of all seen the masthead-light. Unless the officer of the watch keeps his eyes intently on the light until one runs across the ray of the other light, he puts his helm to port when the other man is putting his to starboard, and then you get them very close together. It is a very difficult thing to explain unless you have the lines drawn right straight. It is quite possible, if you had the angles directly drawn, for A to see only the starboard light of B, while B sees the three lights of A.

4085. Could not you have it as much over as *that*?—No, because if you had it as much over as that, you are approaching a position of safety with regard to *this* ship which is well on the bow—almost end on. *This* ship only requires to be a little off the line of course of *that* one. There are two or three positions which you can draw up on paper which would bring about the same result.

4086. Which will give you the result of one ship seeing the two lights, and the other ship seeing only the one?—Just so, and they will both put their helms the wrong way, or rather they will both meet; whereas they are both in perfect safety before they start.

4087. (*Mr. Bolam.*) Do you mean with a small degree of angle or a large degree when you say that they are both in safety before-hand?—I mean they would be both in safety if the lights were not thrown across the bow. They are in safety actually in daytime.

4088. And would be in safety at night if the angle of screening were small?—Yes.

4089. (*Chairman.*) You suggest that this danger only occurs with coarse screening, but is avoided if the ships are screened finely?—Yes, because the angle of the crossing of the light is so small.

4090. Now the suggestion made, and it has been made a great many times to us here, as a reason for the broader screening is, that if you do not have the broader screening there may be positions where each ship would only see the green of the other, and where, nevertheless, if their courses were exactly prolonged they would, or at any rate their yard arms would, come into collision?—No; that is impossible, unless they are very very close together, like *that*. You mean, of course, under the present screening.

4091. Yes?—Well, that is impossible, unless they are so close together that collision is inevitable.

4092. What is suggested is that if two vessels are green to green, each fine on the other's starboard bow, that they ought to be under those circumstances in a position of perfect safety; but it is said that if the lights are screened fine, although each ship only sees the green of the other, still they are not in a position of perfect safety, because if their two courses are exactly prolonged, both coming along in exactly the same way, the two vessels will meet *there*?—Yes, but they are not on railway lines; and in practice, I think, if *this* ship sees a green light practically right ahead, and it continues right ahead without altering its bearing a degree, then she would starboard. But that also, I think, is an exaggeration. If the light is screened from the inside of the wick right ahead (and you would not have it screened finer than that), the lights would then cross, if the lamps are about 10 feet apart, about 95 feet ahead of the ship. You may say that it reduces the angle as at present screened by about one-third; so that it would be impossible. There is no darkness at all; the light crosses at two-thirds the present distance. Then, furthermore, if the ships are coming close together like *that*, the glare that is in the lamps, which can be seen for half a mile without seeing the wick at all, crosses at 28 feet with lamps 10 feet apart, so that it is impossible that that could happen.

4093. (*Mr Bolam.*) Have you tested that by experiment?—Yes.

4094. You are not speaking from theory at all?—No, I am speaking from experiments I have made.

4095. With what kind of lamps?—Paraffin oil lamps; Harvie's lamps—our latest lamps on the last new ships.

4096. (*Chairman.*) Now, you spoke of screening from the inner edge of the wick; is that a rule of screening that you think would be satisfactory?—I think that is the best. I would screen them as fine as I could, but I do not think it would do to go finer than the inner edge.

4097. Perhaps it is only a question of the form of the rule; but as a matter of practice—as a practical matter—do you think it would be better to make the rule in this form: saying that it should be screened to the inner edge of the wick, or that it should be screened to a certain number of degrees from the outer edge of the wick, or the middle?—No. I would take it from the inner edge of the wick altogether.

4098. That, of course, gives you a very simple rule?—That is the clearest.

4099. Now can you tell me at all, before this new rule comes into force, what was, in your experience, the sort of angle to which ships' lights were usually screened?—Well, I was at sea then, and I really did not go much into this question, but I always thought that they were screened from the inside edge of the wick.

4100. You say you were at sea; were you in command of a vessel?—Yes.

4101. One of the Royal Mail ships?—Yes.

4102. How were your lights screened?—I think they were screened from the inside of the wick right ahead.

4103. I dare say you have experience of the opinions of other persons besides yourself. Do you think the general feeling of persons of experience like yourself would be satisfied with the rule of screening to the inner edge of the wick, as far as you know?—I think so.

4104. (*Rear-Admiral Andoe.*) Then you think that the rule as it was before the 4° angle was spoken of was really a very good rule to go by, if it had been properly carried out?—Yes, I think that is a practical rule.

4105. I do not quite understand you when you say that supposing two ships were screened exactly alike, and were approaching one another on parallel lines, each half a point on the other's bow, one would see two lights and the other only see one?—I did not say parallel lines. One ship must be slightly off the opposite direction to the other.

4106. Then you did not mean on parallel lines?—No; but on parallel lines, if one is a large ship and the other a small ship, with different distances between the lights, they can do it.

4107. If the screens are set at the same angle?—Yes, if the screens are set at the same angle, and there is a different distance between the lights; but then that distance is very small.

4108. Yes, it is hardly appreciable, I should think; but the contention of the Board of Trade is that if they are screened at 4°, both the ships, when they are approaching one another, almost ahead of each other, will see each other's two lights sufficiently soon to put their helms to port and to pass clear of one another. That is the idea: what is your view of that?—Well, I think in fine weather it is practically immaterial; but——

4109. One moment, I was going to put this to you. You see, in that case, by putting their helms to port, they would cross one another's bows, so to speak. By daylight we should not do that at sea, as a rule, should we? If you saw a vessel on your starboard bow half a point you would not cross her bow by porting your helm, but you would pass her on the side on which you find her?—Yes, because each of you would have your two masts open.

4110. But at night, each seeing both lights of the other, they would port their helm and go across the other's bows, if they complied with the law; is not that the case?—Yes, if each of them have the rays of both lights open; if they see the three lights ahead, or a little on the bow, certainly they would.

4111. Do you see any necessity for their taking that action; if the lights were more finely screened they would not do it perhaps. Do you think that ships at sea now cross each other's bows sometimes unnecessarily, to act according to the law?—No, I do not think that.

4112. (*Chairman.*) What is put to you is this. If you screen to 4°, vessels when they are half a point, say, off each other's course would each of them see, presumably from perfectly opposite courses, both lights; under those circumstances it would be the duty of each of them to port, and each of them in those circumstances would cross the bow of the other?—Yes.

4113. Whereas if they kept their course they would pass clear of one another?—Yes, that is right.

4114. What the Admiral was putting to you, I think, was, whether you saw any necessity under those circumstances for their crossing the bows of each other, or whether it would be better that they should be allowed to pass starboard to starboard?—Certainly it would be better that they should not cross each other's bows.

4115. (*Rear-Admiral Andoe.*) That is what I was driving at; it would appear that owing to coarse screening ships sometimes cross each other's bows unnecessarily, because they are bound to do it by the law; whereas with finer screening they would not open each other's two lights?—I quite see what you mean.

4116. Is that right?—That is quite right.

4117. (*Captain Hallett.*) When you made those experiments, what particular wicks had you, do you remember?—Our wicks were 2¼ inches.

4118. Single wicks?—No, three wicks, triangular, laying at a diameter of 2¼ inches.

4119. So that whichever way you looked at the lamp you had the full diameter of the flame?—Yes.

4120. Have you ever tried the electric light?—No.

4121. (*Mr. Bolam.*) You say 2¼ inches; that is nearly 4° across the bow from the outside of the wick.

4122. (*Captain Hallett.*) I think you said it would take up about one-third of the present screening?—Yes, that is about it.

4123. That would be to take off a degree and a half, roughly; that would leave you about 2½°; that is about what you would get. If you take a third of 4°,

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it is very nearly 1½°; that would leave you 2½° across the bow by your screening right ahead on the inner edge of your triangular wick?—Yes; that of course would slightly vary with the width of the wick.

4124. Are all your company's lamps made with wicks in that way?—No. Many of them are duplex lamps only, with two wicks, one alongside the other; but these are Harvie's last new lamps; they are very large lamps, with three wicks in a triangle.

4125. Those are wicks we have not seen at all.

4126. (*Rear-Admiral Andoe.*) Do you consider they are better than the others?—Yes; they are magnificent lamps. On a hazy night you see the glare in the lamp, without seeing the wick at all, at pretty nearly a third of a mile; you clearly see the red and green light without seeing the wick—with the wick shut out.

4127. (*Captain Hallett.*) Was that the only lamp you experimented with?—I tried it with the other ships, with the two wicks, but not for distance. I did not measure the distance. I did it more roughly.

4128. Then you cannot speak to experiments made with the wicks that you have got practically in use?—Yes, these are in use.

4129. They are in use?—Yes.

4130. Generally in your ships?—In the last two ships.

4131. They are gradually coming in, but they are not generally in use yet?—No. I think that is probably a question of the size of the lamps; these are very large lamps.

4132. But what I am driving at is, that the majority of ships do not carry as good lamps as that?—No; but my experiment with that was rather against my opinion that the lamps should be screened right ahead from the inside of the wick; because if I were to get one of the other lamps it would cut it off at a smaller angle; that is the worst position.

4133. (*Mr. Bolam.*) The Board of Trade are afraid of this. They hold that there is a very valuable rhyme: "Green to green, red to red, perfect safety, go ahead;" and they say, if the lights are screened to less than 4° from the outside, that rule will not be a safe one. Now, do you think that is a safe rule at sea at all; that if any officer sees the green to green he is bound to assume that there is perfect safety without any limitation, except that there is green to green?—If you do not show the lights too much across the bow, yes.

4134. You think that is the danger?—No. I think it is safe. The more you throw the lights across the bow the less chance of safety there is.

4135. Then, in point of fact, your argument would be this: Assuming the Board of Trade case is to conserve this rule, green to green, you would say the best way to conserve that rule is to make the angle of screening as small as possible?—If the light could be thrown so that it only showed right ahead, then you would be perfectly safe with green to green, because nobody would be so foolish as to deliberately let a green light run inside his green light, or hit against his glass.

4136. The case as laid down by the Board of Trade is this. If you have two vessels of 60 feet beam 4° on each other's starboard bow, that is to say, practically with a red light just hid, and they steer on parallel courses, they will pass clear by 120 feet, that is, two beams; while if they are screened to 2° from the outside, under the same conditions they will only pass by 14¼ feet. Now, in point of fact, as regards navigation at sea and the safety of life and property, which you have to deal with in your service, is there any substantial difference between the ships passing by two beams and passing by 14·38 feet. I mean, do you navigate to a few feet like that?—I think it is straining at gnats; you cannot keep the ships on a railway line like that.

4137. Then, in point of fact, you think the 4° angle would be of no more value than the 2° angle in conserving that rhyme, "Green to green, red to red, "perfect safety, go ahead"?—No, I think it would be better to get the line as much cut off as much ahead as you can.

4138. Then is green to green and red to red perfect safety in any case whatever; that is to say, is it universally true? The rhyme tells us it is universally true; is it?—I have never seen the object or use of the rhyme myself; but there is no doubt but what, under any ordinary management and with proper care, green to green ought to be safe.

4139. But, after all, what an officer looks to is not the colour of the light but the change of bearing?—Well, colour of light and change of bearing combined. But to bring the ships into the position you are mentioning they must remain on the same bearing continuously, and both green lights must be first seen exactly right ahead, or almost exactly right ahead, because the small angle in a distance such as that would not be appreciable.

4140. In fact, Mr. Gray's rhyme wants a line introduced: "Green to green, red to red (with a pretty "smart change of bearing), perfect safety, go ahead;" or something of that sort?—I really do not know that you want a rhyme at all. What I mean is they are not going to knock their side-lights against each other. I am not certain that the rhyme was intended to be applied in that literal and precise manner.

4141. (*Rear-Admiral Andoe.*) "Perfect safety" is a dangerous expression?—No doubt.

4142. (*Mr. Bolam.*) In the case of the Board of Trade, it is thought that Mr. Gray believed that the screening was exceedingly broad, fully 4° or more, and that in consequence of that he made this rhyme; and if the screening were reduced it would destroy the value of this rhyme, and that would be a calamity to the sea service. I think that is the way it is put. In point of fact, you think the rhyme itself, as it stands, is not a very important matter to be maintained?—No, I do not think there is anything in it.

4143. (*Mr. Scrutton.*) Can you give me the size of the lamps in which you have these wicks of 2½ inches; the ordinary lamp is 9 by 9? Do you happen to know what the sizes are?—I really could not say exactly.

4144. Could you send them to us?—Yes, I can send it; not till one of the ships comes in, but I could then.*

4145. But you feel quite sure that 2½ inches is the size?—Oh, yes, that was measured. I have had drawings made of it.

4146. Then what is the size of the duplex; do you happen to know that; what is the length of the duplex?—Nearly 2 inches, I think; close upon 2 inches.

4147. Would you mind verifying that and letting us have a note of it?—Yes.

4148. Do you mean Harvie's lamps?—Harvie's lamps.

(*Captain Hallett.*) Mr. Harvie has spoken here of 1-inch duplex lamps.

4149–50. (*Mr. Scrutton.*) I simply draw attention to this because that is beyond what we have had before, although we have had Mr. Harvie before us. However, you will kindly let us have the particulars?—I will have them measured and send you the information.

4151. Then I understand you to say that vessels screened to the same angle may meet each other, one showing only the one light, and the other showing the two?—If the courses are slightly different, within half a point of each other.

4152. Would it be possible for you, without inconvenience, to let us have a small sketch in which you would show that, because it is important?—Very well, I will send it you. I do not mean to say that they will remain long in that position, but where the danger comes in is, say, from Gibraltar to Ushant, where the ships are running generally nearly on opposite courses. In thick weather you see a masthead-light, perhaps, a mile off, or three-quarters of a mile off, and you suddenly see the other steamer's lights at close quarters, within half a mile.

4153. One vessel will see two lights and the other vessel will only see one light?—Yes; and the distance between the angles of the rays clearing the vessel will not be large, but it will be sufficient to make one man starboard and the other man port, or conversely.

4154. (*Mr. Bolam.*) Will you in your diagram kindly show us how that it is affected by the screening, if affected at all. It seems to me this is just that unfortunate case which no one can ever get over by any

* Captain Chapman subsequently wrote that the wicks measured 1¼ to 2 inches across, the flame measuring 2½ inches. The lamp in which this burner is used is 7.6 inches in diameter, 9½ inches high, and with the chimney, 20½ inches high; it is carried in a lighthouse slung on gimbals. This burner is used in nine vessels of the Royal Mail Company's fleet. The other vessels have ordinary duplex burners.

screening at all—that it will only be got over by the intelligence of the officer?—It can be got over by throwing the crossing angle further ahead of each ship; because the limit within which the other ship can be within the ray of the three lights is considerably reduced, and the ships are farthest from each other at the time when it is possible for this to happen. It may vary from three-quarters of a mile in one instance to a mile and a quarter in another, and if they each put their helms over a little it will be all right; they will not then be close to each other.

4155. Of course if that was done in time, there is time to rectify any mistake if one is made?—Not with a ship going at any speed. If you once put the helm over it must stop that way when you are close like that.

4156. (*Sir E. Harland.*) You referred to this magnificent lamp with the three wicks. May I ask if each wick is adjusted by a separate screw?—I think so, but I will not be certain—I am nearly certain they were.

4157. You will see the point is rather a difficult one, namely, how the three screws can be brought all to act from the inner side of the lantern?—Well, I did not notice that.

4158. Excuse my putting so detailed a question to you, but we are giving some consideration to the construction of lamps, as it appears from our evidence that lamps vary so much in the quality of their light, due in all probability to the various methods of arranging the wicks, and this appears to us quite new. Would you say that this is a better light than the duplex lamp?—I think I have said so already. Each wick is not 2½ inches, you know.

4159. Then we all misunderstood you?—I do not know what the thickness of the wick is, but the diameter of the circle formed by the three wicks is 2¼ inches. That would be approximately the same as one wick at a distance.

4160. No, that would be much less than 2¼ inches; probably that would be more like 1½ inches. However we can easily find that out?—I said it was a triangular wick with a diameter of 2¼ inches. The wicks are not absolutely close together; the angles do not join entirely; there is a little space.

4161. (*Mr. Bolam.*) It comes to this; if it is a circle 2¼ inches in diameter you will practically have 2¼ inches of light almost each time.

4162. (*Captain Hallett.*) Have you those lamps now at Southampton?—No, the ships are away. I shall have one of the ships home in a fortnight.

4163. (*Sir E Harland.*) I make out that it would not produce more than 1½ inch wick; that is very likely what it would be. Would you have your spare lamps exactly the same?—Yes.

4164. So that they would be interchangeable?—Both sets alike, yes.

4165. I put the question to ascertain whether, if it were not so, it would not make a difference to the screen. If you had to fix a larger lantern into the same case, with the same screen, is it not probable that the screen which suited one size lantern would be wrong for the other size lantern?—Yes, it would, but the lamps are the same size and the screen is measured to each lamp.

4166. But is the lantern the same in each case?—Yes, for both lamps.

4167. That is to say, this arrangement of a triangular wick does not necessitate a larger lantern?—Yes, the lanterns are larger than we have in the other ships, but the spare lanterns are the same size.

4168. And in those spare lanterns what is the arrangement of the wick?—The same.

4169. Am I to gather from that that this arrangement of wicks really necessitates a larger lantern; that is the point?—No, I fancy the lantern is larger merely because the ship is larger.

4170. Then the ship being larger you prefer to have a more powerful light?—Exactly.

4171. Just as in a small coasting craft, it would be a very small one?—Just so.

4172. I suppose the expense of the extra size has nothing to do with it?—I do not think that is considered.

4173. Are you aware that it is considered in small ships?—I have no doubt it is in small ships.

4174. With reference to the masthead-light, have you any wish to see the side-lights placed abaft the masthead-light, or immediately below the masthead-light on the forecastle, as an indication, or a possible indication, of the course the ship is steering?—No, I would rather have the side-lights placed under the masthead-light.

4175. Underneath?—Well, as nearly underneath as you can get it. It must be a little abaft it, unless you have the masthead-light on the mast generally, because if you have the side-lights abaft the masthead-light you may get it obstructed by the hawsers that are sometimes coiled up, or something of that kind. You will never get it exactly the same distance in all ships.

4176. But supposing it were a rule or recommendation which most, if not all, shipowners, where they possibly could, would elect to follow—supposing you had that, and supposing that these side-lights, as you know they are in large ships, are fixed above the reach of any coils of hawsers—on the deckhouse forward—would you, in that case, advise, or prefer, that they should be abaft the masthead-lights or not?—I do not think it makes much difference. I do not think you can place much dependence on that.

4177. But suppose they were dependent on it?—I do not see that there is anything to be gained by it.

4178. Some of our witnesses have set forth that if such were the general rule they would be able to at once form a pretty correct idea of the course that a vessel was steering, especially when she was crossing their bow?—Yes, that would be of assistance.

4179. And also in that vessel meeting you, were that angle (an angle of 45° between the masthead-light and the side-lights) getting less and less, so would the vessel be approaching you more nearly bow on. This model may perhaps serve to indicate what I mean. If the side-lights were at an angle of 45° abaft the masthead-light, the vessel crossing your path would be steering from *that* angle; whereas if the vessel were approaching you more nearly, *that* angle would then become less. Would such an indication in navigation be of any value?—Well, it would, but you would have trouble to get it always at that exact angle in the ship.

4180. I suppose you are referring to the various positions of masthead-lights, and the various deckhouse arrangements, or the absence of them, enabling you to put your side-lights abaft the masthead-lights?—Yes. In small ships you might get them at that angle, but in a large ship you would have a difficulty, I think, unless you carried the masthead-light very high indeed.

4181. In large ocean steamers with long ranges of deckhouses, would it not be more easily arranged? Does it occur to you that the captain's bridge is generally something like that distance abaft the foremast, where the masthead-light is?—Yes; but I do not like lights on the bridge.

4182. Then where would you have the light?—I would rather have them forward. If you have them on the bridge, on a hazy night the green light completely blinds you.

4183. Is there no closed in bulwark at the end of the captain's bridge; are there not rails across there, or something?—That does not matter; the rays of the green light come right across in front of you.

4184. Then the view you take is that it is better to have them on the forecastle deck than on the captain's bridge?—Yes.

4185. How would you carry those lights; you would find it necessary to have them in a lighthouse?—Certainly.

4186. Do you think they would be safely carried in the heaviest weather in a lighthouse?—Yes.

4187. Entered from the deck below?—Yes.

4188. What about vessels in the North Atlantic trade, where all that might be ice bound?—I do not think that would happen. Our lights are always carried now, in the newest ships, in lighthouses. The men can get in in the roughest weather to trim them.

4189. But do your vessels ever experience on their voyages the same intense frost as in the North Atlantic trade?—No.

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4190. In the North Atlantic service, would it be possible to avoid those lights being utterly blinded by ice?—You mean the difference caused by the heat of the lamps.

4191. No, I am referring to the vessel ploughing into the sea?—I do not think so, because of the spray; if the ship is diving into it, the lights on the bridge would be covered with spray, which would freeze just as hard there as anywhere else.

4192. You said that you prefer to have side-lights immediately below the masthead lights; what was your object in that?—Only to keep the lights forward. I should prefer the lights to be as far forward of the bridge as they can safely be.

4193. You object to their being at the edge of the captain's bridge abaft the foremast?—Yes, on account of the rays they throw across.

4194. You would prefer them to be below the masthead lights, but the best place, you think, is on the forecastle?—On the forecastle, yes.

4195. (*Rear-Admiral Andoe.*) May I ask one further question. As a seaman, do you think it would be desirable for the position of the side-lights to be fixed with reference to the masthead-light, as nearly as may be, in all ships?—No.

4196. Do you think it would be of assistance to seamen in passing one another to determine the position of each other?—Yes, I think it would; but I think you are going to have great difficulty with that with regard to different sized ships.

4197. I am putting aside construction. I am speaking now of the point of view of the seaman. As the captain of a ship at sea, do you think it would facilitate observation?—Oh, it would be better to have them all the same.

4198. Because at the present time sometimes you see the bow-lights before the masthead-lights; sometimes abaft the masthead-light, sometimes immediately below the masthead-light; consequently you are not at all sure how the ship is going?—Just so.

4199. Therefore, do you think that if and so far as it were practicable, it would be desirable, to have the lights always in the same position relatively to the masthead-light?—Yes, it would be, decidedly.

4200. I mean from a seaman's point of view?—Decidedly, it would.

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Mr. THOMAS J. RICHARDS called and examined.

4200*a*. (*Chairman.*) I believe you are a surveyor in the service of the Board of Trade, and have been so for over 23 years?—Yes.

4201. In the course of your duties have you inspected a large number of ship's lights?—Yes.

4202. What has been your practice with regard to screening ship's lights?—To have the depth of the chock equal to the distance between the screen and the inner edge of the lens.

4203. Before 1892?—Yes, that was always the case.

4204. How did you say you screened lights before the new rule came into force?—So that, assuming the screens are parallel, the depth of the chock should be equal to the distance from the inner edge of the lens to the side of the screen.

4205. So that in other words you screened to the inner edge of the lens?—Yes, that was so formerly.

4206. Can you tell me whether that was the same thing as screening to the inner edge of the wick, and if not how much difference there would be? Was the inner edge of the lens about the same thing as the inner edge of the wick or not?—No, I should not think so.

4207. What was the sort of difference, do you think?—It would be about an inch, I should think, or thereabouts. I cannot say that I remember measuring that specially.

4208. As compared with the present angle of 4° from the outside edge of the wick, what angle would that give?—When the new regulations regarding the 4° angle came in I found that it made little or no difference.

4209. Then is it your view, with regard to the vessels that you examined and approved before the new rules came into operation, that the screening was substantially the same?—Yes.

4210. Where have you inspected lights—in what part of England?—I was for some years in the Tyne district also at Cardiff, and at other ports. Latterly, I have been in London.

4211. How long, may I ask, have you been in London?—About two years and a half.

4212. Before 1892, I mean. What I really wanted to know was this. Were you ever at the same ports before and after the regulation of 1892?—This rule came into force when I was at Cardiff.

4213. So that you saw the old state of things and the new state of things at Cardiff?—Yes, at Cardiff, and I then observed to the authorities in London that in my experience it made little or no difference. The lights were practically screened to the 4° angle as we had been screening them.

4214. I see you say you have passed other equivalent plans—that is plans equivalent to having a chock equal in thickness to the difference between the inner edge of the lens and the outside of the screen—to obtain the same object. What plans are those?—Supposing I found that the screens were bent outwards so as to have the effect of putting the chock on the parallel screen, I should accept that.

4215. So that, however it was got at, what you really did was always to see that the screen was to the edge of the lens somehow or other?—Yes, that is so, ever since I have been in the Board of Trade.

4216. And you reported to the authorities that it made very little alteration in the screening obeying the new as compared with obeying the old regulations?—That is so—that is the case.

4217. You say it made very little alteration. In what direction was even the slight alteration that you noticed?—In my opinion the lights were screened a little more broadly—a little more than 4°.

4218. (*Sir E. Harland.*) They were previously?—Yes, a little more if anything.

4219-20. (*Chairman.*) You think, and no doubt you are quite right in thinking, that it is necessary for the red and green lights to cross slightly, so as to ensure that the lights should be uniform from right ahead to two points abaft the beam. Now as to the angles between 4° and a less angle, what is your opinion? Is it your opinion that 4° is a good angle to screen at?—Yes, I have formed the opinion that the angle is not too great in order to ensure safety; that vessels may go clear of one another.

4221. In your judgment, as I understand it, there is no danger in the lights being screened to 4°?—I think not.

4222. Of course it must be admitted to be the case that if they are screened to 4°, and therefore see both the lights of each other, and obey the rule, of course it follows that they do cross each other's bows?—You mean the lights do?

4223. Each vessel crosses the bows of the other. That must be so?—Quite so, yes.

4224. What I rather want to get from you is this. Do you see any reason why they should cross each other's bows? Suppose they were originally on the starboard side of each other, why should they not remain on the starboard side of each other, why should the vessels cross?—It seems to me that for safety you must have the lights to cross.

4225. I do not know whether you have had any experience at sea?—Yes, I was an engineer at sea.

4226. So you have had some opportunity of judging?—Yes. Of course I am not a seaman; I am an engineer.

4227. However, as you have considered the matter, we may just as well have the benefit of your opinion. What I was putting to you was this. If the lights are screened 4°, they would see each other's two lights when, in point of fact, they were each, we will say, on the starboard side of the other?—Quite so.

4228. If they are each on the starboard side of the other, why should they not remain so?—I see no reason why they should not, if you could get both to act in a safe manner.

4229. Of course. Therefore, assuming that both of them when they were starboard to starboard—I carefully abstain from saying green to green—but when they are starboard to starboard, if both of them see the green light of the other, and they are in fact starboard to starboard, there is no reason, is there, why they should cross each other's bows?—Except that you want both vessels to act in such a way as will keep them in a safe position, and it seems to me that in order to do that, you must have one universal rule that they should port their helms and go clear.

4230. But why should not this be the universal rule. If you screen them so that each sees the green light of the other, why should not they keep on?—They would do that, of course, under those conditions in daylight, but I do not see that they can do that at night, simply because you are bound to have the lights cross so much as will enable the vessels to go clear of one another. Perhaps I do not quite understand your question.

4231. What I was putting to you is this. You have two vessels on parallel and opposite courses, starboard to starboard. If you could so arrange that in that case they should each of them see only the green light of the other, is there any reason why they should not proceed and pass starboard to starboard?—It seems to me you cannot have those conditions in order to enable the vessels to go clear of one another, assuming they each keep their separate courses.

4232. That is a very fine matter, is it not? Of course I quite follow what you point out, but if the vessels are exactly on opposite courses, and running, as one of the witnesses put it, on railway lines, they would or might touch the sides of each other. Is that the consideration that weighs with you in saying that the lights ought not to be screened finer than 4°?—That is the view that I hold; yes.

4233. The answer which seamen give is that under those circumstances the safer and better thing is that each vessel should give a touch of the starboard helm. What do you say to that?—Of course I am not a seaman, but I have thought over the matter and it seems to me there would be a certain amount of danger in that, owing to the uncertainty as to what would be done by both the vessels.

4234. Now; is there any other reason that strikes you why 4° is preferable to a finer angle?—One reason I have for thinking 4° is the proper angle is that by simply altering the course of each vessel a point they go abundantly clear; so that I cannot see why the 4° angle, having other advantages, should not be allowed to remain. Each vessel alters her course a point and they go clear. At about a distance of a mile they can have a distance of, I think, about 800 feet between them.

4235. But if they are screened finer they need not even alter that point?—If you screen them say to 2°, then, assuming each vessel is just out of the line of visibility of both the other vessel's lights, they would be running straight ahead towards one another, and they may come into collision or be in danger of doing so.

4236. That comes to the very same point that I was putting to you just now. Beyond that is there any other reason that strikes you why 4° is preferable to a finer angle?—No; it seems to me the reasons I give are abundantly sufficient for keeping the 4°. I cannot see any reason why it should be altered.

4237. (*Rear-Admiral Andoe.*) Not being a seaman, I presume you have never had charge or control of a ship under way, have you?—No.

4238. Then I suppose the opinions you have expressed regarding the movement of these ships in consequence of their sighting one another's lights are purely theoretical; not the result of your own personal experience at sea?—Not the result of my personal experience at sea; but it seems to me the opinions I have expressed are such as any person can hold, and hold clearly and strongly, simply by laying down the positions of the vessels on a sheet of paper.

4239. Does not the position of the wick in the lamps vary very much in different lamps in ships?—Not very much.

4240. Would you expect to find the wick in all lamps almost precisely in the same position with regard to the screen—the distance from the screen which gives the line parallel to the keel?—I presume you refer to the distance of the wick from the side of the lamp, because the position of the lamp with reference to the screen does vary a very great deal.

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4241. I know, but I wanted to know with regard to the screen. Would you expect to find the wick with regard to the screen that gives the line parallel to the keel precisely in the same position in all ships?—No; there is a good deal of difference, simply because the position of the lamp with reference to the screen differs a great deal, some lamps are put close, others are put further out.

4242. Then with regard to the lamp itself, do you find the position of the wick nearly always the same distance from the side of the lamp?—Well, not exactly, but there is a considerable similarity in the position.

4243. You could not say that they are always exactly alike?—No; of course you have to deal with the lamps of various makers.

4244. It is from the wick that you get the light, and consequently the angle depends on the position of the wick?—Quite so. You are now speaking of the old lamps.

4245. Yes, before 1892. Now you take the outer edge of the wick?—Yes.

4246. In surveying lamps and screens at ports where you have been, what actual steps did you take to verify the accuracy of the screening?—Do you mean always? I do not know whether you refer to the present state of things.

4247. I mean as a rule what steps did you take to verify the accuracy of the screening?—In the first place I ascertain that the screens are parallel with the centre line of the vessel.

4248. How do you ascertain that?—Stretch a line from the centre line of say the top gallant forecastle to the foremast, and then measure from that centre line to the foreward and after end of each screen.

4249. Is it the practice of the surveyor to do that?—Yes.

4250. Do the smaller cargo vessels carry, in your opinion, lights sufficiently good to make them visible at the regulation distance at sea?—Well, they do not carry such high class lamps as the larger class of vessels, but they carry lamps in accordance with the Board of Trade regulations; that is, with burners not less than one inch broad—when paraffin is burnt.

4251. Have you got any means of testing those lamps so as to know whether they show the regulation distance?—No.

4252. That is never done?—We have no means of testing them. Of course we are influenced by the tests which have been carried out from time to time by the Board of Trade, and the instructions which the Board of Trade have issued to us.

4253. But you never by your own actual observation prove that they are up to the specification as far as power goes?—No, I have always understood that with a lamp of the description that I have mentioned, two miles is quite as much as it shows.

4254. (*Captain Hallett*). After you have obtained the information that the screen is parallel with the middle line of the ship, how are you going to get the angle at which the screening is?—The distance from the outer edge of the wick to the side of the screen is measured.

4255. How?—Well, in the first place I measure from the side of the lamp to the outer edge of the wick, then add the distance from the side of the lamp to the screen, and deduct from that the depth of the chock. The difference between the depth of the chock and the other measurements should, for a distance of 3 feet from the light, give 2½ inches.

4256. Four degrees?—Four degrees, yes.

4257. Now, are those measurements taken by a rule or by compasses, or what?—By rule.

4258. I mean it would be a little difficult to get a rule into those lamps and measure them accurately, because a quarter of an inch there makes a good deal of difference?—No, I do not think there is any difficulty in the matter. You can place one rule across the side of the lamp *here*, and then measure by another rule from this

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rule to the outer edge of the burner or of the wick. That would give you the distance quite easily.

4259. I do not fellow how you do it, because you have only one door, and you have the lens and one thing and another in the way?—The door is as a rule *here*, and the rule is placed across *here*.

4260. And then you measure the distance by squaring the two rules?—Yes, of course the door is not always *there;* sometimes it is in one place and sometimes another, but there is no difficulty practically in doing it.

4261. Do you put all the lights in place when you measure?—Yes.

4262. The spare lamps and all?—Yes. The Board of Trade have no rule requiring spare lamps. Spare lamps are as a rule carried on board vessels, but that is more particularly owing to the action of the underwriters.

4263. Do you not see the spare lamps placed?—Oh, yes, those are seen.

4264. But I mean are they measured for their screening?—Yes.

4265. Because they may not be exactly the same lamps?—Well, if there is any difference they have to be altered. The owners are requested to alter them.

4266. Where have you been lately—in London, you say?—In London, yes.

4267. Since this 4° screening came into operation?—I was in Cardiff when the alteration as regards screening came into force.

4268. You say the majority of angles had to be reduced?—No, I found that the new rule regarding the 4° angle made very little alteration in the screening.

4269. They were pretty well correct?—Yes, practically correct.

4270. (*Captain Castle.*) You said 2½° from the inside wick was equivalent to 4° from the outside wick?—No, I say that if the distance from the outer edge of the wick to the parallel line through the outer edge of the chock be 2½ inches then the 4° angle is obtained.

2471-2. (*Captain Castle*). I thought you said they were the same—that one was 2½ inches and the other 4°?—I do not remember making any remark about 4 except as to the 4° angle.

4273. (*Mr. Bolam.*) Were you a principal officer in South Wales?—No, I was the senior surveyor there.

4274. What port were you at?—Cardiff.

4275. Then you do not appear to agree generally with the evidence of the principal officer for South Wales, whose view appears to be that the Board of Trade have considerably lessened the angle of screening in the Bristol Channel district. You think the angle has remained about the same?—I did not understand that that was his view.

4276. But, at any rate, whatever his view is, your view is that the Board of Trade have practically left the angle untouched?—Yes, that is my opinion.

4277. And you speak of Cardiff?—Yes.

4278. You never measured the distance from the inner edge of the lens to the inner edge of the wick of any lamp that you ever screened?—I will not say that, but I do not remember the distance; I did not regard that as material.

4279. And therefore you cannot say anything about it now?—Indeed, I have measured it.

4280. You do now?—I have frequently measured it in order to see that the full light would get out of the lamp.

4281. That is now?—Yes, and formerly also; but I am not in a position to say the exact distance.

4282. Therefore, you can say nothing about the angle the inner edge of the wick made with the outer edge of the chock?—Yes, the angle that the inner edge of the wick made with the outer edge of the chock on the screen would be simply the angle of about 4° reduced by the angle subtended by the breadth of the wick.

4283. May I say that that is a general proposition that does not meet my question. If you have screened the inner edge of the lens to the outer edge of the chock fore and aft—at right angles to the ship's fore and aft line—and if you have no recollection of the distance between the inner edge of the lens and the inner edge of the wick, you cannot state now at all positively what angle the inner edge of the wick would make with the outer edge of the chock?—No, I cannot.

4284. Have you any record of the depth of the wick at right angles to the fore and aft line previous to the 4° rule coming into operation in 1892?—If the burner is placed at right angles to the line of the vessel then with paraffin lamps, that breadth would be about one inch; if it is at an angle of 45° the breadth would be about ¾ of an inch.

4285. That is simply a mathematical statement. But I want to know if you have any record of the depth of the wick at right angles to the fore and aft line; previous to the 1892 rule?—Yes, the breadth of the wick has been an inch for many years.

4286. Of all the lamps that you have examined?—All the lamps with paraffin burners—one inch to one and one-eighth of an inch.

4287. For all the lamps you are speaking about?—Yes, except when fitted with oil burners.

4288. You have no positive recollection of the angle the inside edge of the wick made with the outer edge of the chock?—But I can tell the angle from the outside. My recollection does not depend upon the inner edge of the wick, it depends on the outer edge of the wick.

4289. Previous to the 4° instruction?—Certainly, Yes.

4290. But all you positively say now is that you screen the lamps so that the inside edge of the lens was fore and aft with the outside of the chock?—Yes, that was so, formerly.

4291. Do you know Harvie's lamps?—Yes.

4292. Do you know whether in Harvie's lamps, previous to the 4° instruction, the line joining the inside edge of the wick, the inside edge of the lens, and the outer side of the chock, was one straight line parallel to the fore and aft line of the ship?—I cannot say that.

4293. Can you say it was not?—No, I cannot.

4294. How long were you at Cardiff before you went to London—how long were you at Cardiff after the 4° instruction was in force among the surveyors?—About 12 months, I should think.

4295. How many ships did you examine?—I cannot say—a considerable number.

4296. And at any rate you did not diminish or increase on the whole the angle of the screening; you thought you left it very much the same?—Yes, I considered that the screening was practically not altered by the new regulations.

4297. (*Mr. Scrutton.*) Do you treat the spare lamps exactly in the same way as you treat the others?—Yes, they are treated in the same way.

4298. Do you examine them exactly in the same way?—Yes.

4299. Fit them into their places?—Yes. I may say that since I have been in London I have not had very much to do with the inspection of lamps myself. I am senior engineer surveyor, and my duties do not leave me very much to do with that now.

4300. When you did take an active part in the matter, did you treat the spare lamps in exactly the same way in all particulars as to measurement and everything as the other lamps?—Yes, that is so.

4301. Exactly?—Yes.

4302. Did you find that the spare lamp always agreed with the other?—No, it required alteration sometimes.

4303. Did you see that alteration done?—Yes.

4304. Absolutely?—Yes.

4305. You did not give your certificate until you knew it was done?—Not until I was satisfied that it was done; and that has been the practice with the surveyors generally.

4306. Now with regard to the glass. Did you adopt any plan whatever to test the efficiency of the glass?—Efficiency in what way?

4307. Whether it allowed a free escape of the light or otherwise—for instance, as to its colour?—Its colour was tested by the colour we knew that it should be.

4308. Did you carry that colour about with you?—No.

4309. What did you trust, then?—I trusted to my judgment of the degree of darkness and colour that there should be, but in all cases of doubt it was compared with standard colours in the office.

4310. How did you do that—just simply hold it to the light to form an opinion?—No, the lamp was lighted.

4311. And you went how far away from it?—Took it into a dark place and examined the colour of the light under those conditions.

4312. Having nothing to compare it with?—Except in cases of doubt.

4313. You simply trusted to your impression?—To my own judgment; except, as I say, in cases of doubt, when reference would be made to standard glasses that we had in the office.

4314. Did you on board ship have anything whatever to do with the lights at any time?—In what way?

4315. When you were on board ship in what way did the lights come under your observation?—They did not come specially under my observation while I was an engineer on board a vessel.

4316. Do you attribute any of the knowledge you have to the fact that you were an engineer?—No. I of course had frequent opportunities of examining and observing the behaviour of lights while stationed in the Tyne. You see vessels approach from seawards from the pierheads, and you have as much opportunity of seeing them as if you were at sea.

4317. (*Sir E. Harland.*) I think you said that you were in the habit of dealing entirely with the inner edge of the lens as a measurement for the chock?—That was formerly, before these regulations.

4318. That is before 1892?—Yes.

4319. Then up to 1892 you had not taken any notice whatever where the wicks might be placed in the lantern relatively to the fore and aft line of the ship and the edge of the lens?—No, not specially.

4320. Did it ever strike you that there was a great difference in distance from the inner edge of the lens to the edge of the lantern in one lamp as compared with another?—There really was not very much difference at that time. Lamp makers went very much on one plan in making their lamps; and in order that the crossing of the lights might be obtained and that the lights should show two points abaft the beam, it was usual then to place the wick nearer to the lens than it is now. The result was that the wick was not quite in the centre of the lens, and the Board of Trade issued an instruction that the wick must be in the centre of the lens, and that led of course to an alteration in position.

4321. Do you think that there was a great variety in the positions occupied by the wick prior to 1892?—I do not think so.

4322. In consequence, I mean, of the variety of positions of the edge of the lens?—I do not think so. I do not think the position of the wick varied very much in lamps.

4323. You would admit that there was a good deal of chance in the matter?—Oh, certainly, there was a certain amount of variation in the position, and that of course led to the need for alteration in some cases and not in others. But what I say is that as a rule putting the chocks on in the way we did we practically got a 4° angle.

4324. Would you consider the present mode of dealing with the wick more desirable than the former method?—Certainly. There is a great deal more precision about it.

4325. Have you had experience of screening lights placed in lighthouses?—I have had less to do with those placed in lighthouses than those placed otherwise, but I am conversant with the arrangement of them.

4326. Have you ever measured your chock or set off the angle of lights in lighthouses on ships?—Yes, in a few cases.

4327. Did you find any difficulty in it. Was it equally difficult or more difficult to do than the other screens?—I do not remember having to do with lighthouses previously to 1892.

4328. Since 1892 have you adjusted the screens in any of the lights carried in lighthouses?—In a few cases only.

4329. Did you find any difficulty in so adjusting them?—Well, they are less easy to adjust than they are with an open screen. They are not so easy to get at.

4330. How did you go about making your measurements and counter-measurements?—The parallelism of the screen was ensured first, and then the distance was taken from the outer edge of the wick to the inner edge of the screen in the same way.

4331. But how did you ascertain that, seeing that the screen is not inside the lighthouse?—Well, it is much more easy to do it if you are able to move the lens.

4332. What may be termed the weather glass outside?—Yes, quite so.

4333. Did you ever remove those weather glasses?—No, I cannot say I have.

4334. And if you had, would the lens not then have still been in the way?—Yes; there is difficulty in it. I can scarcely describe generally how it is done, but we attend to the same broad principles of seeing that we get the same angle of 4°.

4335. Would you have preferred there being some little opening on the inner edge of the lighthouse so as to have measured through this opening to the wick?—I think what would facilitate it very much more would be the glass being removable, so that it could be slipped out. There is no practical difficulty in that, and it certainly would facilitate the measurement very much.

4336. I suppose you will admit that those glasses must not be very easily removed, otherwise the sea might remove them?—If you could slip them down from the top I do not think there would be any danger then. Indeed, a small screw or clip would be sufficient to keep them in.

4337. (*Mr. Scrutton.*) How did you make the dark room when you tested for colour?—We went into the top gallant forecastle and shut down the dead lights there.

4338. How far would the lamp be from you when you looked at it?—Perhaps 15 feet.

## Thursday, 27th June 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Captain HALLETT.
Sir EDWARD HARLAND.
Mr. SCRUTTON.

Mr. C. HIPWOOD, *Secretary*.

*Capt. Turriff.*

27 June 1895.

Captain TURRIFF called and examined.

4339. (*Chairman.*) You are, I think, a captain in the Merchant Service?—Yes.

4340. And at the present moment in command of the "Hogarth"?—Yes.

4341. How long have you held the position of master of a ship?—Since 1865.

4342. (*Sir E. Harland.*) Of a screw steamer?—Yes.

4343. (*Chairman.*) Where has been your experience?—Principally on the coast.

4344. The East Coast?—Yes.

4345. Between London and where?—Between London and Aberdeen.

4346. What is the tonnage of the "Hogarth"?—1,227 tons gross.

4347. Is that generally the sort of vessel which you have been engaged in during that time?—A little smaller the other vessels have been.

4348. How often do you go?—Once a week each way.

4349. You go up and back again?—Yes.

4350. Each voyage is about what?—Thirty-six hours.

4351. Do you go with passengers and cargo?—Yes.

4352. I suppose up and down that coast there is a great deal of traffic, is there not?—Very much.

4353. Which means vessels going north and vessels going south?—Yes.

4354. Besides that, at various points there must be a great deal of cross traffic?—A great deal of it.

4355. Traffic coming from foreign ports and going to Hull, the Tyne, and all down the coast?—Yes.

4356. So, I suppose, you pretty constantly meet vessels?—Yes.

4357. And very often cross vessels?—We are very seldom without seeing some.

4358. Both by day and by night?—Always.

4359. Of course your 36 hours covers, and must cover always, a day and a night?—Yes.

4360. So you have experience of both day and night each way?—Yes.

4361. Now I want you to tell us, please, what is your view about this screening of the lights. What do you say as to the present rule which requires that these lights should be screened to an angle of 4°?—My impression is they cut too close ahead.

4362. Cut too close?—Yes, cut too close ahead.

4363. So that, in your judgment, the lights ought to be screened finer?—The lights ought to be screened finer.

4364. So that they would not cut so far ahead?—Yes.

4365. Before the present rule came into force——

4366. (*Sir E. Harland.*) You say "cut so far ahead," I presume you mean so close ahead?—Yes.

4367. (*Chairman.*) That is to say you think the lights should be screened finer, so that they would not cut so close ahead?—Yes.

4368. Now before the 1892 rule came into force, what was your experience as to the screening which existed in fact. First of all with regard to what you yourself had to do, do you think they were screened finer or coarser?—They were screened finer than they are at the present time—very much so. In fact my impression is they were making a very great mistake when they altered them.

4369. What do you think was the sort of screening which was adopted before the rule came into force?—I should say something like 2°.

4370. You consider that preferable to the 4°?—I prefer that in the narrow channels which we are accustomed to.

4371. Could you tell us why you prefer the finer screening to the 4°?—Simply because you require less altering of the ship's course to show you the one distinct light.

4372. You mean that supposing, for example, you have a vessel on your starboard bow, in order to be sure that there is only one light visible you would require to alter less if you starboarded your helm slightly than if you had to port it and get across the bow?—Just so.

4373. When you say especially in narrow waters do you mean by that river or narrow waters only?—The approaches to the Thames and the Thames itself; I consider those channels are very bad.

4374. For vessels coming from the north the channel is narrow by which they approach the Thames?—It is after you pass—Cromer we will say.

4375. When opposite the Essex coast all vessels coming to the Thames from the north come through a comparatively narrow channel?—Yes, from Orfordness.

4376. You think it important especially in these channels to have the lights screened finer than 4°?—Yes.

4377. Do you yourself see any danger in lights being screened finely—do you see any objection to that?—No, I see no objection to that at all.

4378. You know what is suggested is, that if the lights are screened finely two vessels on parallel courses, not quite end on, would be green-to-green in the sense that each would have the other on the starboard hand, and if they prolonged their courses with strict accuracy those two vessels would almost touch. I daresay you have heard that suggestion made?—It is quite true in these narrow channels that we have got to contend with that on the coast; it is a close shave very often, and we must put up with it.

4379. You pass close to each other?—I say it is customary to pass each other very closely. We cannot avoid it, and I prefer having to alter slightly than having to alter at a larger angle. My idea of the large angle would be that it may do well enough in the open sea, but I do not approve of it in the narrow channels.

4380. I forgot to ask you before, do you take a pilot?—We take a pilot from Gravesend. I am my own pilot from Orfordness to Gravesend.

4381. You take a pilot from Gravesend?—Yes.

4382. Do you have your own pilot in going through these channels off the coast of Essex?—I am my own pilot.

4383. If you had your way about this matter of screening now, what rule would you like to see adopted?—Just about half what they are now—about 2°.

4384. Have you any opinion whether it is best to screen from the outer edge of the wick as opposed to screening from the middle or from the inner edge?—That I have never seen tried. I do not know how these lights would work; I have no experience of them.

4385. I daresay you know that before the 1892 rule they were screened to the inner edge of the lens, which may or may not have been screening exactly to the inner edge of the wick?—I understand that there are different sets of lamps, or rather that the wicks are differently set in different lamps; but whether that makes any difference to the light or not I cannot say.

4386. You have not, of course, yourself conducted any actual experiment?—No.

4387. I should like to ask you this. Of course, you know gentlemen who are acquainted with these subjects. What do you think is the general opinion of the practical men you have come across?—The general opinion of the practical men of Aberdeen, particularly those in the coasting trade, is that the lights ought to be shaded finer; that is the general opinion of all those I have consulted in the coasting trade.

4388. (*Mr. Scrutton.*) Do you say that is the opinion of practical men?—That these lights are too closely cut, we see the two lights too close together—or rather when the ships are too close together. We see them up to the last moment, you may say, before we know exactly how to alter. Were they cut finer a very little angle would show one light distinctly which would be more satisfactory to all of us who work the narrow channels.

4389. (*Rear-Admiral Andoe.*) You said that you preferred fine screening for narrow channels?—Just so.

4390. But you would, as I understand it, prefer the 4° screening for the open sea?—For the open sea, certainly.

4391. Then do you suggest having two kinds of screening, one for narrow channels and one for the open sea?—No.

4392. Which, do you think, on the whole, would be the better?—2° instead of 4°.

4393. Why do you think 4° would be better for the open sea?—Simply because there is more room to alter the course wider.

4394. Is it desirable? Take the case of two ships meeting each other, half a point on each other's bows, starboard to starboard, if they were screened to 4°, one would probably see both lights of the other, and, according to law, they would have to port their helm to keep clear of one another, would they not, if they saw both lights ahead, or nearly ahead?—Just so; that is where I consider the evil is, we see them so long, and the ships get so close before there is seemingly any alteration.

4395. Therefore, even in the open sea, you do not see any objection to the finer screening?—Not where there is ample room.

4396. I say, in the open sea you do not see any objection to the finer screening?—No, not a bit.

4397. Do you meet many ships on your voyages backwards and forwards passing in nearly opposite directions to you?—Well, I reckon between London and the Tyne is the most busy place in the world; we have them from Harwich and all those ports along the coast.

4398. Have you been able to notice since the new 4° rule came in that there has been any perceptible difference in the screening of ships you meet?—No further than we do not know exactly what the ship is going to do until we get close to, and I believe several accidents have happened through that.

4399. Do you find that they nearly cross your bows before they begin to alter, when they are coarser screened?—No; but they very often do approach very close before they alter.

4400. You attribute it to the coarser angle of screening?—Yes.

4401. (*Captain Wilson Barker.*) You said just now you think the old angle would be 2°?—I believe so.

4402. Did you ever take any pains to discover what it was, did you ever take any measurements?—No.

4403. You only imagined that?—Yes.

4404. You think there is a decidedly marked difference since the new rule came in?—Decidedly so.

4405. You notice it very much?—I notice there is a great difference.

4406. Because the general body of evidence seems to point to the fact that the angle of screening was greater than 4° before?—I cannot see that.

(*Chairman.*) Not all; that is the effect of some of the evidence.

4407. (*Captain Wilson Barker.*) Have you noticed whether there is any difference between the way the red and green lights shine across the bow, across the line ahead of the ship?—Yes, I have noticed in the ships that I have commanded since the alteration was made, that we can stand forward and see both side-lights of the ship.

4408. But do you find that one shows more ahead across the bow than the other, both being screened to exactly the same angle?—You can see both lights till you are very close together, and no doubt after there has been an alteration made in the ship's course.

4409. Can you see the red light more on the green side than you can see the green light on the red side?—If it is a case of seeing both lights, I cannot say that there is any difference, or that we see one light better than another. If you can see them at all it seems to me you can see one as distinct as the other.

4410. Would you see the red light at right angles to the course of the ship on the green light side more than you would see the green light in a similar position on the red light side?—No, I could not see that.

4411. You have never noticed that particularly?—I have never noticed that specially.

4412. (*Mr. Bolam.*) When the new 4° rule was issued, were your chocks cut down, or was something added to them?—My ship has never been altered since.

4413. You said that the opinion of captains in Aberdeen is that the angle should be less than 4°?—Yes.

4414. And you are in the passenger trade from Aberdeen to London?—Yes.

4415. And do you see the captains who are in the passenger trade between Dundee and London?—Yes.

4416. And from Leith to London?—Yes.

4417. Have you any idea what their opinion is?—I have no idea what their opinion is, any further than it was their impression that it was a mistake having them altered. It was the general idea that it was a mistake.

4418. Have you ever heard of anyone objecting to a larger angle of screening being made smaller than before?—No.

4419. All the objection you have heard is from these people who have had the lesser screening angle made larger?—Just so.

4420. You see there is no doubt that some ships had their lights crossing more than 4° before, and some had them crossing less than 4° before; therefore to make that 4° uniform some must have had the crossing lessened, and some must have had it slightly increased?—Of course, knowing it was compulsory I was under the impression that all ships would be the same.

4421. You have heard no one grumble that the angle has been made less than before?—No, but the general opinion is that it ought to be made less now.

4422. By "narrow waters" you do not mean rivers only?—Not exactly rivers only, but you may be passing along the edge of the banks.

4423. You mean coming south?—Yes.

4424. Therefore you call the banks off Yarmouth, narrow waters?—Yes.

4425. So that narrow waters, according to you, to a large extent, is also ocean navigation?—Yes.

4426. You do not know now what another ship is going to do with a 4° angle of screening?—No.

4427. Is not that danger quite as great in open as in narrow waters?—Yes; the only difference would be you have more room to wipe your ship off.

4428. But although the angle of screening is made smaller you are not compelled to use a smaller helm in open water?—No.

4429. (*Mr. Scrutton.*) Your vessel is 252 feet long?—Yes, that is on the keel.

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4430. Do you know how far from the stem your lights are placed?—As near the middle of the ship as possible.

4431. And standing on the stem you see both lights?—Yes, I could see the lights standing on the forecastle deck about 10 feet abaft the stem.

4432. Did the Board of Trade officials know that that was the case, do you think?—Their attention was called to it on more than one occasion, and not only that, but the green light especially was a great nuisance to us on a dark night shining over the rails.

4433. And still they did not alter them?—Still they would not hear of any alteration.

4434. Have you tested the screening to know whether it is 4°?—Yes, that has been done.

4435. And it is 4°?—Yes.

4436. Have you any idea how many vessels you meet going north, ordinarily?—Putting it down in round numbers, I might say 100.

4437. Constantly meeting?—Yes.

4438. And in the same way as you come south?—Yes.

4439. (*Sir E. Harland.*) In your answer just now you say that a little abaft the stemhead you could see both lights; do you think that you saw the wicks of those lights, or was it only the outside of the lens that you saw?—Possibly it may have been only the outside of the lens, but the lights seemed to be perfectly distinct.

4440. Have you dioptric lenses?—Yes.

4441. Do you think it is possible that it might have been the outer edge of the lens you saw from the forecastle?—It is quite possible; it is a difficult matter to see the flame through those glasses.

4442. The effect of the prisms being to distribute the light generally through the lens?—That would be so.

4443. Your side-lights are pretty well amidships and your masthead light is pretty well forward?—Just so, on the foremast.

4444. That being so, a vessel whose path you were crossing would see your side-lights at a considerable angle abaft the masthead light?—Yes.

4445. Do you think that is an advantage as giving an indication to the other ship as to the course you are steering?—I think the lights being abaft the foremast is an advantage.

4446. That is to say, at the first sight you are able to form immediately a pretty good idea as to what course she is on?—Do I understand you to mean the lights, or only one light?

4447. I mean the masthead and one light, so (*describing with a model*)?—That is a distinct advantage.

4448. You are able at once to see in that position, that *this* ship is going *that* way?—Yes.

4449. And if the lights were now, as I am placing the model, you would at once conclude that as this angle is finer she is coming more nearly towards you?—Coming more in a straight line.

4450. You would then prefer that all ships, if possible, should have their masthead and side-lights arranged something on *that* principle (*describing*)?—Just so, but you would have to show a great angle to get *this* light in the position in which it is now showing.

4451. In other words, to accomplish this, you think it would be desirable and necessary that your side-lights should be pretty well amidships?—Just so.

4452. Assuming your mast head light is pretty well forward?—Yes.

4453. It is to give an angle of 45°, or more?—Yes.

4454. If such were the custom of placing ships' lights it would be a great advantage?—Yes, it would be a great advantage.

4455. Some ships are fitted with the lights on the after part of the forecastle?—That is so, and with the masthead light abaft it is very apt to lead ships astray if the ship is making very little headway.

4456. Which way do you think they should be fitted?—On *that* principle (*describing with the model*).

4457. Do you know many cases where the side-lights are immediately below the masthead light?—Very few, the other is by far the most common.

4458. And you would be glad if that were to be the rule?—I should like it, certainly.

4459. (*Rear-Admiral Andoe.*) You said just now that narrow waters were narrow channels where you have not got free space to navigate or manœuvre your ship as you are confined by the narrowness of the channel to a small helm?—Just so.

4460. Is that what we are to understand you think is a narrow channel?—Yes, we very often come through Yarmouth Roads, and the approach is very narrow indeed and dangerous.

4461. You said—perhaps hardly meaning it—that you consider it open ocean navigation; but a seaman speaking of open ocean navigation means to say that he has got ample room for manœuvring his ship?—That is when you are well out at sea; but these narrow channels are placed in the North Sea.

4562. But the question was put to you, whether you did not consider these narrow channels in the North Sea to be ocean navigation. I ask you as a seaman whether you consider being in a very narrow channel, although it may be in the North Sea, is ocean navigation?—Well not exactly the same; but I think Mr. Bolam was a little exacting in that part in asking whether I considered a narrow channel was confined only to rivers. It was simply upon that that I gave that answer.

4463. As a seaman you would not call it open ocean navigation if it referred to a narrow channel?—Certainly not. That is what I meant.

4464. Therefore you would treat a side-light in a narrow channel, although it was out in the sea, exactly the same as if it was in the Thames?—Just so; certainly.

*Mr. C. Hall.*

Mr. Chas. Hall called and examined.

4465. (*Chairman.*) I think you are a member of the Institute of Electrical Engineers?—Yes; also of the Naval Architects, and an Associate Member of the Institution of Civil Engineers.

4466. And you hold some office in connection with the P. and O. Company?—I am chief of the Repairs Department, having to do with the upkeep of the Company's steamers, and the electric work has come into my hands as a specialité. All the lighting of the fleet has been carried out by me.

4467. So you are well acquainted with the electric lights used by the P. and O. vessels?—Yes.

4468. Are most of the vessels of the P. and O. fitted with electric side lights?—All new ships; all since about 1889 or 1890. A trial was first made of one large incandescent lamp in each side light having the "focus" filament advocated by Chance Bros., and with the colours in the glass; these proved failures, and I then designed a group of five lamps arranged thus (*exhibiting specimen*); this gives 80 candle-power, and if one lamp fails the loss of light is not important; these have been largely used, and have been highly commended.

4469. (*Sir E. Harland.*) Is this a side-light?—Yes, it is intended to go in the place of the oil lamp as made by Chance; it fits into the gimbals, in the same place.

4470. (*Chairman.*) Identically the same lamp?—All the hangings, the same reflector as before; but in this the electric light takes the place of the oil-lamp. In the case of one filament failing you still have the light of the other four filaments.

4471. What is the power?—It has a total of 80 candle-power; I had it in my mind to increase it so that it might be visible at long distances.

4472. Do you have 80 for red as well as green?—It is not needed so much in the red light; in some cases three lamps only have been used for the red light.

4473. (*Mr. Scrutton.*) What is the size of each?—They are 16 each.

4474. (*Chairman.*) Three would be 48?—The incandescent lamp is a special one I had made for the purpose; it is, you will observe, of very compact form.

4475. (*Rear-Admiral Andoe.*) Each lamp is 16?—Yes. This is not a long-lived lamp, but answers the purpose

of making the thing compact. Unfortunately the arrangement of five lamps in a group is now being objected to by the Board of Trade; it is a little too large in diameter for them, and, I understand, crosses the bows so as to affect what is called the "dark lane."

4476. (*Chairman.*) Before we come to that what sort of lights are now actually used in new vessels of the P. and O. like the "Caledonia"?—It is in this form on the "Caledonia" at the present time; but I understand that we shall have to alter it and substitute one with only two lamps.

4477. Are there any vessels which are used with the two?—Some of the cargo vessels have only two lamps.

4478. Do you put them side by side?—No; one lamp is in focus and the other one behind (out of focus), as a standby. It is under the special permission of the Board of Trade we have the second light at all. They prefer to have only one; I do not say this from my own knowledge, I am so informed by Captain Angove who has communicated with the Board of Trade, and he says that the tendency is in favour of one lamp; which, in my own judgment, is unsafe.

4479. Because if that filament breaks?——There is a darkness.

4480. In this case if you triplicated the light, at any rate you have two if one should go?—Yes.

4481. When you have got all these in, what breadth does that give?—2¾ inches, the outside of the filament, —as near as possible 2¾ inches over the outside edge.

4482. That is of course too much?—Half an inch too much.

4483. (*Mr. Bolam.*) How much is it *this* way—about two or what?—That is not 2 inches, 1⅞ inch I should think; if the filaments are flat you might make it still less.

4484. (*Chairman.*) There would be difficulty in arranging it, but you could have two lamps at any rate and yet exhibit an area of only 1 inch or 1½ inch?—It means an undesirable filament. You can get a light of 100 candle power in one lamp if you wish; but it would necessitate a large filament, which would tend to break itself by its own weight; it is not a filament that would last, and is not so safe a filament as those of 16 candle power for that reason.

4485. Can you tell me this. Take the ordinary oil lamp such as we suppose the P. and O. probably used before the electric light was introduced. What candle power would they give?—I cannot speak from any measurements, but I should think 18 or 20 candle power. I can only speak from conjecture.

4486. Does that compare measure for measure with these lights; would an electric light of 40 candle power be really double the power of a 20-candle oil-lamp?—I think so; the Ediswan 16 candle power lamp is an absolute 16, if the lamp is new.

4487. When you speak of the power of electric light, is the candle power the same unit as for an oil lamp?—Yes. I think it can be depended upon that this lamp is of the power of 16 standard candles. It is a new lamp, but this result, of course, supposes that it is worked up to full power. After a little time the light-giving power of the lamp will go down.

4488. Then why do you think it necessary to have the electric light produced so very much more powerful, to double and even treble?—Owing to the increase in speed in the new ships. Two ships approaching each other at 18 knots, have evidently less time to see the lights than in the old days at a speed of 10 knots.

4489. Your reason is not in fact connected with the inherent character of the electric light as opposed to oil-light, but rather on account of the altered conditions of navigation?—As I understand officers are always anxious to have the electric light in side lights on that account, and for the reason I have stated, the increase of power (particularly that of the green light) was much appreciated by our officers.

4490. Supposing it was thought sufficient to have electric lights, of say 40 candle power, so as to be well over the old lamp, and not much over it, would there be any difficulty in providing them so as not to have a greater breadth, than somewhere about 1 inch or 1½ inch?—There would be no difficulty, but there is an objection in other directions, which I will tell you of. An accident occurred in my own experience. We had (as previously mentioned) some red and green 80 candle power lamps, having the colouring in the glass of the bulbs, the filaments like this (*describing*), the ordinary reflector behind, and we found that the heat rays were focussed by the reflector upon the glass and the vacuum drew in the glass like the bottom of a bottle, the glass being softened by the excessive heat.

4491. It is clear you ought not to have it?—Not all the power in one lamp.

4492. (*Sir E. Harland.*) With the filament inside?—The filament remained uninjured in one case; I have not the lamp; it was handed to Mr. Swan and unfortunately he never returned it.

4493. (*Mr. Bolam.*) The candle power of that would be 200, I suppose?—No, only 80 I believe; I am only speaking from recollection, but I can ascertain accurately if you wish.

4494. (*Chairman.*) What power would you think sufficient; what is the power of the lamps you have shown us?—16, the bulbs are rather small for this power and they are easily broken by spray or even a cold draught.

4495. Could you put two of those into a larger glass?—Yes, I have seen double filament lamps, but have not used them (*double filament lamp with screw connexions produced*). We use the ordinary 16 candle lights in other parts of the ship; we have no screw couplings, they shake loose.

4496. What breadth of filament is necessary? Suppose you designed two lamps each of 16 candle power, what breadth of filament would you require?—That is a matter for the designer, and one I cannot accurately answer. I do not call myself a practical lamp maker.

4497. (*Sir E. Harland.*) What is the diameter of that filament?—It is about 1¼ in. over the curl.

4498. (*Mr. Bolam.*) That is marked 100.

4499. (*Captain Hallett.*) 100 volts?—Yes, and 16 candle power.

4500. (*Mr. Scrutton.*) Sixteen each?—Yes, a double filament lamp, the danger of which is unfortunately that if one filament breaks it will most probably cause the breakage of the other by "short circuiting" it.

4501. (*Chairman.*) I should like to ask you as to that?—If one breaks the other would almost to a certainty break also; in this respect it is in my opinion less reliable even than the "focus" filament as advocated by Chance.

4502. I am afraid you have crushed my hopes as regarded this. That seemed to have solved the difficulty somewhat, but I am afraid now it will not do. You have two filaments, each of 16 candle power, put into an area which exceeds the length of the inch and quarter?—If one breaks the other would break immediately. The breakage of the one would almost certainly cause the breakage of the other.

4503. So you think it better to have two separate lamps?—Yes.

4504. Still if you had two separate lamps it could be so arranged that for the purpose of screening them—you could so arrange the area that in screening it would come to something like 1¼ inches?—Screening is rather out of my depth.

4505. I only want to know your view?—It is a thing I have endeavoured to follow up, but I cannot see day-light yet.

4506. Would there be any difficulty in having two lamps, each of 16 candles, one behind the other?—It is, as an actual fact, now the practice to use two lamps so placed in several of the cargo ships of the P. and O. Co.

4507. You do carry them in the cargo ships?—In recent cargo ships we have had two lamps in that way by agreement with the Board of Trade, who prefer the two lamps rather than three or five.

4508. (*Mr. Bolam.*) You mean one behind the other?—Yes; it is a special concession of the Board of Trade.

4509. The light of one lamp is practically transparent through the light of the other for all practical purposes?—As I understand the front is in focus, and the other is simply put for our satisfaction as a matter of safety.

4510. (*Chairman.*) In order that if anything went wrong there would be the other to fall back upon?—Yes.

4511. Do you think it important in the case of an electric lamp to have what you call a stand-by lamp,

*Mr. C. Hall.*

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so that if one breaks you have the other?—I always advocate at least one spare lamp.

4512. As a matter of fact, do you know whether these are apt in practice to break. We know in a room when they give way they give way very suddenly?—Our Edison and Swan lamps give an average life of 2,000 hours, that is to say they last as a general rule for nearly two years.

4513. Is there any great variation?—At the end of their life they get black, and you have not 16-candle power, but for 2,000 hours it can be got with but trifling variation if the lamp is good. The average "life" spoken of just now is drawn from observation of about 12,000 incandescent lamps about one half of which are removed annually.

4514. Are some of them liable to collapse before that time?—Yes, of course, some break sooner than others from various causes.

4515. Electric lighting is near enough to everybody in a house, and it is the experience of almost everybody that until they have done their work they do not collapse?—In some degree it depends upon how the lamp is stored. If the filament is at all soft it will sometimes take a permanent "set" so that it touches the glass, and goes at once. This is a reason for always keeping lamps in a vertical position. Sometimes, if carelessly handled, the lamp is destroyed by a blow, or if put on the current with the filament "hitched" on itself, it will break at once.

4516. Do you know whether the action of the ship affects it?—I do not think that has any effect at all, if the carrying is good. As a matter of fact, I know of some old lamps in use now which, I believe, are upwards of 5,000 hours old, and they have not blackened very much.

4517. I have no doubt you have a strong opinion that the electric light is preferable for side-lights?—As far as I am individually concerned I prefer them, and I find that on board ship everybody likes to have them; as far as my own duties are concerned they give little extra trouble. It is certainly in the interests of safe navigation to provide electric side lights of increased power, provided they are reliable.

4518. One might fairly expect that the Mercantile Marine will adopt the electric light more and more?—Yes, it has been adopted very largely already for side-lights.

4519. Now with regard to that light, is there any objection made by the Board of Trade, except in respect to the extreme breadth?—The objection relates to the width alone, I believe. The commanders are all in favour of it; they seem to be very pleased with it. The plan is not patented and I have nothing to gain by blowing its trumpet, but it appeared to me to be a good mode of meeting the difficulty, and after a great deal of thought and experiment I induced my directors to try it.

4520. I see that answers the purpose, always supposing the light is in exactly the same place?—Yes.

4521. Would it not collapse if a screw got loose?—Yes, but there is no chance of its shaking loose.

4522. Then on what does it hang?—In the light-house; Chance Bros. provide the excellent arrangement in which it fits.

4523. (*Rear-Admiral Andoe.*) Do all these lamps burn at the same time; is that the idea?—All the five lamps are intended to be in use in a green light; but in a red light only three really are required.

4524. But all burning at the same time?—Yes.

4525. Kept as a reserve so that you do not rely on one?—If one breaks you have the others to fall back upon, that was my idea, and there was no great diminution in effect if one lamp out of five breaks.

4526. How are the electric lights fitted in the P. and O. ships, in the old lantern?—No; in all the ships which have this pattern it is in the gimbals in a light-house.

4527. Are all fitted with light-houses?—All the large ships were fitted with light-houses.

4528. But in the smaller ships?—In the smaller ships the electric lamps are fitted in the copper lanterns.

4529. In the ordinary lantern?—Yes; I should like to get away from that.

4530. Not a specially made lantern?—No.

4531. What sort of a lamp do you fit in these vessels that are not specially fitted for it?—It is used like *this*, on two holders, holding two ordinary incandescent lamps, and it has a reflector, I think, fixed to the base.

4532. What power lamp?—16 candle-power.

4533. All 16 candle-power lamps?—Yes.

4534. How are they placed in reference to the lamp there; is one behind the other?—Fore and aft.

4535. One behind the other?—Yes.

4536. What report do you get of them; are they satisfactory, speaking generally?—That question I can scarcely answer. It comes more in Captain Angove's province. He is the superintendent, and all the arrangements about these particular lamps pass through his hands. He has negociated with the Board of Trade in the matter. As the result of those negociations, the two lamp arrangement has been produced to supersede my five lamp arrangement.

4537. I suppose the objection of the Board of Trade to it is, that it does not comply with the proper angle of screening?—It is too large an angle.

4538. (*Captain Hallett.*) Would it be possible instead of having the filament bent to bring it in at the top and bottom of the lamp quite straight?—It would completely alter the connexion. You would have to make a connexion above and below.

4539. You could make it so as to get a straight filament?—You would have to alter the whole—to alter the whole design of the holder in order to do it—you would require two instead of one. Of course, it can be done, an electrician can do anything of this kind.

4540. I want to know whether you could manage with a straight filament instead of a bent one, so as to get a distinct line of light?—Quite so.

4541. But with that you would not get the full candle-power; you could not get the 16 candle-power in this limited space?—No, you could not.

4542. It would be too long?—It would increase the length to about eight or nine inches.

4543. But by putting in two or three filaments you could get a certain light which would cover a large space. But I suppose the placing of many filaments close together has this danger, that if broken the least thing makes them move, and if you multiply filaments they are very likely to touch one another?—Yes.

4544. And then they show a certain tendency to break?—They break.

4545. Could that be avoided?—Yes.

4546. Do you think it would be possible to make one in that way?—Yes, I think it could be done.

4547. I mean so as to give you the proper amount of light?—It is a matter for the lampmaker to answer. I should not like to guarantee the light of the lamps, but it is a possible thing to do, I should say.

4548. (*Chairman.*) Perhaps you will tell me this: Does the power of the lamp vary with the length of the filament?—And the substance of the filament as well, it is a matter of how much incandescent area you have.

4549. So you could get it either by length or by breadth, as you like?—You could have the filament straight up if you like. It involves a connexion here, and another one at the other end. I do not quite see at the moment how it could be managed; it would be eight or nine inches long if you wished the filaments to have 16 candle power each.

4550. (*Captain Hallett.*) Do you remember if your lamps had a second lamp which lights up on the other one going out?—No, I have tried that, it is rather a complicated arrangement.

4551. You have not fitted them?—No, I do not consider such an arrangement suitable for work of this kind, exposed to salt water. Even in the lighthouse you get the edge of a glass leaking at times and admitting spray. A glass is broken occasionally, and salt water coming in gives a lot of trouble. Salt water is the greatest enemy with which electricians have to contend on board ship, and in presence of salt water I like everything as simple as possible.

4552. (*Mr. Bolam.*) How long does it take, supposing one of the filaments is broken and you have discon-

nected the lamp, to remedy it with another?—Not two minutes.

4553. So that at the worst it is a question of two minutes. It takes far less time than if one of the oil lamps went wrong?—I should think so.

4554. You do not know anything about screening I understand?—No, it is not a subject I can offer an opinion upon.

4555. You would not know whether it is owing to the heat on each side of the breadth of light that throws the lights across the bow?—I am not aware.

4556. (*Sir Edward Harland.*) I suppose your notion of these five lights is in order to mass together a greater amount of luminous power?—Quite so.

4557. From some points of view one lamp must be immediately behind the other?—It is not quite so you will find, the lamps are all in "echelon."

4558. Suppose that this lamp is immediately ahead of me, and I see those two lamps exactly in line with each other, I gather from you that the light from these two incandescent lamps would be double that seen from one?—I should say so, because it is all collected and thrown out by a large reflector—a very accurate reflector.

4559. Supposing there was no reflector?—With no reflector you would not get the same result.

4560. That is to say, if one of these be 16 candle-power in every direction, then if you were to put another 16 candle-power behind that, would that be equal to 32 candle-power?—No, I should think not, if one lamp was immediately behind the other, but in my arrangement you will notice that the lamps all clear each other.

4561. Is it not generally conceded in oil lamps that duplicate burners give you a double light?—An all-round light probably.

4562. But does it not give you, as it were, one flame passing through the other?—I could not answer that without experiment, I should not like to guarantee that.

4563. I understand the Board of Trade object to your lamp as being too broad?—Yes.

4564. Then does that mean that while that which is say two inches is objected to, still the Board of Trade do not object to ordinary lamps of an inch and three-quarters?—As I understand it this is almost half an inch too wide.

4565. It is the half inch extra width they object to in this light?—That is as I understand it. I have not seen the Board of Trade officers about it myself. I believe Captain Angove can tell you more than I can.

4566. You have three of these in the red and five in the green. What would your notion be of the efficiency of the light, supposing that you were to place three of those exactly one behind the other in a line with the keel?—I do not know what it would come to. It is difficult to express an opinion until one has tried and tested it. My preference would be to put them in a triangle.

4567. Supposing you had them in a triangle what do you estimate the width would be then?—An inch and three quarters at the very outside.

4568. Then would that comply with the Board of Trade requirements?—I should say it ought to.

4569. Have you suggested that?—No, I have not, it has not occurred to me until now, and the matter is in Captain Angove's hands.

4570. Do you think it possible that Captain Angove has considered this mode of having a triangle light?—It is not at all improbable Captain Angove has spoken of that, but he has not told me so.

4571. If you had the three lamps, one behind the other, would that not give you as concentrated a light as possible lengthways with the keel of the ship?—The difficulty would be that only one of the three lamps could be in the focus of the reflector. My preference would be to put three lamps in a triangle and let the centre of the triangle be in the focus.

4572. But as far as throwing a strong light ahead is concerned, would the reflector not do its duty to those three lamps as in the ordinary lamps?—If it is accurately made—if it had only one possible focus, two must be out of focus.

4573. But in view of these lamps not being required merely to show a light directly ahead, but also to show to two points abaft the beam, would a reflector be misplaced if the three lights were put with the object of throwing the strongest possible light ahead in one narrow film of light; do you think that would be gained by so placing the light from the three so that it would be generally reflected all round at the various points of the compass?—It is a thing I should like to try before I gave an opinion. A hasty opinion on such a subject would not be prudent.

4574. May I ask you why you have these lamps hung in gimbals?—The gimbals are part of the outfit of the oil lamp, and my arrangement was designed to go into the socket which the oil lamp had previously occupied.

4575. Is this an appropriate light for the mast-head light?—Two ordinary 16 candle-power lamps in a line fore and aft on the mast-head.

4576. Does the mast-head light not show round three-quarters of the circle?—I cannot say what arc of a circle it shows, but they are approved by the Board of Trade.

4577. Then why have you one incandescent light for the mast-head as against five for the side-lights in view of its being as important?—I have not spoken of one. We have a pair of lamps in fore and aft position.

4578. Then it is two lights in the mast-head light?—Yes.

4579. Why have you two in the mast-head light when you suggest three or five for side-lights?—Because the coloured glass in the side lights absorbs more than the clear glass of the masthead light, the green especially.

4580. Suppose one of these two fails?—In the event of one failing the other remains effective—16 instead of 32 candle-power. I understand that there is not the same necessity for a strong light.

4581. Is it not as important?—That is a point on which I can express no judgment of my own; my attention has been principally directed to the improvement of the side-lights. In the mast-head light I have heard of no difficulty.

4582. (*Chairman.*) One thing I heard you say, that you should like to get rid of the old form of lantern?—Yes, this metal connection. It is undesirable to put an electric light in the neighbourhood of more metal than you can help, and an electric light fitted in a timber box would be in my opinion a preferable arrangement.

4583. You think it would be desirable not to utilise your ship's old lanterns?—I do; it is the same sort of thing as putting electric lamps on gas standards.

4584. (*Captain Hallett.*) You would prefer a wooden lantern if placed in the lighthouse properly protected? Yes, and the ordinary lamp on the top—each with its own screen.

4585-6. (*Mr. Bolam.*) What is the smallest width of the filament of one of these—I have the five and the two this way; can you give me the width?—It is as near as possible ⅛ in. out-to-out in a diagonal direction at the widest part of the filament.

## Wednesday, 3rd July 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain HALLETT.
Sir EDWARD HARLAND.
Mr. ISMAY.
Mr. SCRUTTON.

Mr. C. HIPWOOD, *Secretary.*

*Mr. W. H. Laslett.*

3 July 1895.

Mr. WILLIAM HENRY LASLETT called and examined.

4587. (*Chairman.*) I believe you are a Liverpool surveyor for the Board of Trade, are you not?—Yes, and also a consultative officer for Liverpool and the northern ports.

4588. When did you join the Board of Trade?—I joined it early in 1876.

4589. Before that time what was your position?—I was ship-building manager of a ship-building firm at Hull.

4590. For some years I daresay?—Yes, five or six years.

4591. And since that time you have been engaged in the service of the Board of Trade?—I have.

4592. At Liverpool?—Yes.

4593. Where else?—Our district extends from Barmouth to Silloth, but I have always been stationed in the Liverpool district.

4594. Then is it your duty to survey ships on their first voyage before they go to sea?—We survey them at any time.

4595. I should rather like to know what the ordinary practice is. When ships are first built do you survey them then?—Yes, before they are registered.

4596. Then afterwards what do you do; do you survey all ships that come into Liverpool?—As vessels come in we visit them and inspect them from time to time, noticing anything that is amiss and getting it remedied.

4597. Do you inspect those belonging to other ports as well as Liverpool?—We inspect all British, including of course colonial vessels as often as practicable.

4598. Do you inspect foreign vessels at all for any purpose?—Only when called upon; not in the ordinary way of work.

4599. So that in that way, I suppose, year by year a very large number of vessels pass under your observation?—Yes.

4600. Whenever you inspect a vessel do you always inspect the lights?—Always.

4601. I think you have looked into some statements that have been made by Captain Wade who was called as a witness here, have you not?—Yes.

4602. The first one I see is Question 3766:—"Have "you any special knowledge of the effect of side-lights "when screened to that angle?—I have; the ships "which belong to our firm are 14, and I will give you "the date of their screening respectively. Twelve of "those ships were formerly screened parallel with the "line of the keel, and they have all been altered "by the Board of Trade instructions to a 4° angle. "Ten of these ships carry passengers and two are "cargo boats. The two other ships to make up the 14 "are new vessels built since this regulation has been in "force, and I did not quote them; they are screened to "the 4° angle. I may say that these vessels were "formerly screened to the outer edge of the wick, "parallel with the keel, and since then the chock "has been reduced 2½ inches to give the 4° angle. The "effect of this alteration has been that I have observed "both side-lights on the forecastle head of three of "these ships, one being especially apparent owing "to the superior quality of her lamps, the largest "and best lamps made." Now, have you any observation to make upon that?—I cannot possibly ascertain the accuracy of the statement as to taking 2½ inches off the chocks. It is a fact that the chocks have been reduced but the amount given I cannot get from any of the engineer surveyors who have done the work. They have not kept any record.

4603–7. Have you any reason to doubt from any information you have obtained the accuracy of Captain Wade's statement?—I have great reason to doubt the accuracy of the amount of it. The surveyors that I have seen who have to do with most of these vessels particularly assure me that 2½ inches is a great deal too much; that it was more like an inch or an inch and a quarter; but I cannot gather definite information at all.

4608. Then Question 3794. In speaking of the "Lara," the witness had said "but I have frequently "in a river gone aground on the banks, which was due "to the fact that you could not see anything with the "light illuminating the ship herself. 3794. (*Mr. "Ismay.*) Across the forecastle?—Across the forecastle "The ship was altered, and 2½ inches came off the "chock at the end of the screen, and she ran for "12 months like that; she was re-surveyed, and the "Board of Trade Surveyor on the completion of his "survey instructed me to take another half inch off the "chock, which I declined to do, and it has not been "done yet. I had very serious thoughts of putting "a large piece on to the chock because of the diffi-"culty that we got into through the way that the "ship's lights were screened. They show me the "danger we are being led into . . . . There is "one other ship the 'Creaden'; I measured her lights "and she is an altered ship, and I find, as she stands "now altered, that she is screened to 4 inches to "the inside of the wick, or to 5 inches to the outside; "both her side lights are plainly visible 70 feet ahead "of the lights." What do you say about that?—With regard to the "Lara," the chock is a big one. It is rounded at the top, and it twists. It is rather misleading. It is not parallel in thickness up and down. Why it was made this shape I cannot tell. It would have been better if it were parallel up and down and thus made the conveyance from the entire outer surface of the chock, or if it tapered uniformly top and bottom.

4609. Not parallel in thickness up and down?—No; and I think it wants a little bit off the bottom of the chock to make it exactly the 4°. Why it should have been made in that way I cannot say.

4610. Then he says that the 2½ inches came off the chock at the end of the screen and ran the vessel for 12 months like that, with the 2½ inches taken off. Was the original 2½ taken off as far as you know?—That is the point I cannot ascertain for certainty; the chock was a pretty big one; even now it is 5⅝ of an inch thick.

4611. In order to give her 4° screening?—Yes; therefore it must have been 8 inches originally if he took 2½ inches off.

4612. Then it is the case that some ½-inch was taken off afterwards, the object being, as I understand, to make the chocks uniform?—Yes.

4613. Then as to the screening of the "Creaden"?—The "Creaden" was seen in Liverpool and the report was sent in as to her convergence being irregular, a request being made to the master to put it right. The fact is that the surveyor was removed from Liverpool not long afterwards and the vessel has not been seen since really. I have seen the vessel now myself and found that the two screens are not alike still, but they have not been touched at all. There is no appearance of a blow having been struck upon them, and Mr. Horne,

the Superintendent, informed me that they have never been altered. This is what I found; the starboard screen is nearly parallel to the middle line; the port screen is not, it stands outboard an inch at the fore end. In addition to that, it is not vertical, it falls outboard. Then there is a play of $\frac{3}{16}$ of an inch in the round hole that the davit goes through the rail. Then there is a play of $\frac{3}{16}$ of an inch in the screen itself at the end of the davit.

4614. (*Sir E. Harland.*) Is that a screen which moves?—Turning outboard.

4615. On the captain's bridge?—No, it is underneath it.

4616. That is amidships?—Yes. Then there is a further play of half an inch in the lantern itself when put into its position and it has to be secured by lashings; with all these irregularities it is impossible to get an accurate measurement of the angle twice the same. I found it so, and I measured it just as it was, and I found that the port screen converged $4\frac{1}{2}°$ and the starboard screen converged $5\frac{1}{2}°$. I measured it in every way, athwart ships, and I sighted it from the bridge, in order to get it as accurate as possible. I am perfectly certain it does not converge to 8°, and Mr. Horne told me it had not been touched, and certainly there was not the mark of a blow on it. The paint looks as if it had been untouched for years.

4617. (*Chairman.*) Now, as I understand you, although in the position you had screened the lamp it was $4\frac{1}{2}°$ to $5\frac{1}{2}°$, the lamp might have been at a different time so placed that it would give a larger angle of screening. You said there was some play in the lamp?—Yes, but the screen and lanthorn not being either rigid or upright will always involve variations in measurement as it is Under any circumstances this will all have to be allowed for. The whole thing hangs over.

4618. Did you put it in that condition?—I put it in the worst condition I could.

4619. And that gave $4\frac{1}{2}°$ and $5\frac{1}{2}°$?—Yes.

4620. I do not say it is anybody's fault; I only want to know the fact. Was that lamp with the screen in that condition passed by the Board of Trade?—No, it was not passed; the surveyor who visited the vessel, Mr. Taylor, had unfortunately been removed from Liverpool, and he omitted to make a note in his book that it was not so altered; but he appears to have been under the impression that it was altered.

4621. As a matter of fact, it was by a mistake?—Yes, but it was not 8°.

4622. Now in answer to Question 3807 Captain Wade said: "Previous to the Instructions to Surveyors of "1892 I have never known a Board of Trade Surveyor "to measure any chock or light screen, or anything "connected with it, with the exception of examining "the lamps when they were unshipped to see that "they were efficient articles. I have never, and my ex-"perience at sea has been in passenger vessels—vessels "which hold a passenger certificate from the Board of "Trade—up to this period known a Board of Trade "Surveyor taking and measuring the screens or any-"thing connected with them in passing his survey." What do you say about that?—The answer to that is that there never has been the slightest variation in the practice of surveyors in regard to light screens. The screens have always been placed fore and aft, parallel to the centre line of the ship, and that has always been obtained by measurements from the middle line. If on examination screens are found not parallel it is not, however, always the practice to insist on alteration of them. The line from the outside of the chock to the inside of the lens has been then made parallel with the centre line of the ship, this has been done to save expense in such cases. I have never known of any variation in that practice.

4623. Before 1892 was it the practice of the Board of Trade Surveyor to measure the chocks?—Always.

4624. And since that time has it been the practice to take these measurements on passenger vessels?—There has been no variation whatever since 1892, except that the screen formerly was 3 feet before the lantern, and now it is 3 feet from the centre of the flame, and the angle is defined. During my ship-building time, and during the 20 years I have been surveyor I have never seen the slightest variation, and recently I have seen Mr. Williams, of Liverpool, Mr. Hoar, Mr. Dixon, Mr. Watt, Mr. Buckwell, Captain Jeffery, and Captain Franks, of Liverpool. In Ireland I have seen Captain Sconce and Mr. Gloss; and in Cardiff I have seen Captain Chalmers, Mr. Sloggett, Mr. Mayor, and Mr. Sheers. I have seen them within the last week and in every instance I have allowed them to give me just their definite statement; and as we were all trained under the one system I can assure you there has never been the slightest variation in our practice.

4625. What Captain Wade seems rather to suggest is, not that the system was not the same, but that in point of fact the Board of Trade Surveyors have not devoted much attention to the screening?—It is wholly untrue. I may say that before a ship can be registered a surveyor has a little book in which there are printed notes, and he has to fill up the book, and there is a page appropriated to lights, and this always has been so. I allude to what is called S. 64.

4626. Now at Question 3879 he was asked:—"Then "I suppose that you recognise that in a vast number "of ships it is the common practice to place them with "the lights in lighthouses particularly in modern "times?—Yes, I think I can give a very fair "reason why that is done. Probably a third of my time "is spent in ship-building yards, looking after new "work and repairs that we are doing. I have noticed "that the Board of Trade have entirely set their faces "against lighthouses being placed amidships or any-"where amidships to the extent of refusing to pass "them (upon what ground I do not know), and that "has necessitated this, that the builders invariably "say, 'Well, just let these be put forward—it is a "'very good position, and there will be no trouble "'with the Board of Trade,' and by that means they "bring a pressure upon the owners about putting "them there. Many of these owners are not practical "men, or have not much experience of ships them-"selves, and they accept it, as the Board of Trade say "that is the position, and in fact they go further any "say they will not pass them if they are put amid-"ships." What is the practice of the Board of Trade with regard to the position of lighthouses?—The Board of Trade does not fix the position of the lights at all. It is quite contrary to the Board of Trade instructions for a surveyor to dictate where the lights should be carried at all; and in practice the surveyor never does. As far back as March 1876 the Board of Trade instructed surveyors to this effect. The instructions are that they shall be placed so that they show a clear light ahead free of all obstruction, and if abaft the main beam of the ship they shall be brought out to show clear of the main beam; and in practice the masters themselves fix the position. All we do is to see that there is no possibility of anything happening to obstruct the vision forward. I have myself many times had lights, when carried amidships, lifted higher up in order to be clear of obstructions, but I never myself objected, and I never heard of anyone objecting to lights being amidships. You see that statement is what the builder says, he does not say that the Board of Trade official ever said it.

4627. Perhaps it may be an entire mistake, but do you know is there anything that might have suggested that view to Captain Wade, or anybody else?—Well, it may possibly have been suggested by the lighthouses being put amidships and then objected to because they were not high enough up. I have known several cases where the lighthouses have been amidships, but the lights have not been high enough up. In point of fact they were only so high that a man could stand right in front of them. I have seen lots of these lighthouses like that, and then after the owner has gone to the expense of having them constructed he cannot use them. We have been obliged to step in and say: "If you are "going to have them there you must have them "higher up," and I can mention several vessels where the lighthouses are not used at all because they are not high enough up above the deck, and both men and fittings can obstruct them.

4628. In the same way he is asked again at Question 3892: "Then so far as sailing ships are concerned, you "do not think that where that is so it is with the "object of keeping these lights from being blinded "by the canvas?—Of course that argument applies "with more force to a sailing ship than to a steamer; "but my view of it is this, from the actions I have "seen of the Board of Trade Inspectors themselves, "that those lights are placed forward so that they "should not be seen on the ship herself, for if the "same lights were put amidships and screened to "a 4° angle they would both be visible on the fore-

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"castle deck of the ship itself; it is pretty well "understood that this would take place, and from "my own experience shows me that it does take "place." You say in the same way he is mistaken in thinking that the Board of Trade Surveyors express the opinion that the lights ought to be amidships?—Yes; but the case of steamships and sailing ships is very different. As a matter of fact, very few sailing ships carry them amidships, they carry them forward, as pointed out here, for the purpose of being clear of the sails. It is the practice occasionally to have temporary fittings aft for bad weather. We have no power to object to that; but even then they will not show the 4° angle free of obstruction; but then it is only done in very bad weather. We do not recognise it, but we have no power to stop it; but the almost invariable practice of sailing ships is to carry the lights forward, a few on the forecastle head, but the great bulk of them abreast of the forerigging.

4629. (*Mr. Ismay.*) Do not some of the smaller ships carry their lights further aft?—Small sailing ships?

4630. Yes; schooners?—Yes; in the case of small coasting schooners you will find them sometimes a bit further aft; but I think you will find 9 out of 10 are forward.

4631. (*Chairman.*) Perhaps as you had experience before 1892 you can tell me what the practice was as to screening, so far as it came under your observation before 1892?—The object was to put the screen itself in a fore and aft line by measuring it across from side to side, and plumbing down the middle line, so as to get them equally distant, the side light then being placed on the lug outside the screen. To obtain the size of the chock, a measurement was taken from the outside of the screen to the inside of the lens, and that was carried forward to the fore end of the chock, and that gave it the thickness. It was the invariable practice; that always gave a convergence, but it did not give an uniform convergence, it was more or less in accordance with the size of the lantern itself and the length of the screen, but it always converged. In the Instructions to Surveyors, issued in September 1868, at the top of page 4, the several ways of regulating the convergence are given, and they agree precisely with the system carried out by the surveyors up to 1892 when the actual angle was defined. I carried out the same system as a shipbuilder before I joined the Board of Trade.

4632. Now, in point of fact, before 1892 what was the angle of screening contemplated by the Instructions of 1892—I mean in reference to the outer edge of the wick?—If the screen was 3 feet long before the lantern and the wick was shown on those sketches in the instructions, it would come to an angle of a little over 4° according to that sketch; but the angle itself really did vary from 3° to a little over 4°. The sizes and formation of the lamps is so immensely varied that there was at that time no real uniformity at all, but it was a very rare instance indeed where I should say the screening was less than 3°.

4633. So that, in point of fact, the effect of the 1892 rule was to increase the screening from 3° to 4°?—No, I say the minimum angle, which my experience would lead me to before 1892, was about 3°, but then we did not pay attention to the outside of the wick at all, but we went to the centre of the wick.

4634. I thought you said that you screened to the inner edge of the lens?—Yes, for the thickness of the chock, but the burner was outside the fore and aft line through the chock.

4635. What I wanted to know was, what angle that gave in practice from the outside of the wick?—It gave for a screen 3 feet long before the lanthorn a little over 4° generally.

4636. I want to compare the state of things before 1892 and the state of things after 1892?—I think that strictly carrying out the instruction as to a 3-foot length of screen before the light, with an ordinary 9-inch side-light, it made practically no variation whatever.

4637. So you think the practice before 1892, was substantially the same as after 1892?—Yes, but you get side-lights 9 inches on the side, and 10 inches and 11 inches; they will not give the same angle, but I am now confining my reply to a 9-inch side-light, and I think that the present 4° angle is practically the same as what it was before 1892.

4638. But you can test by your own experience in one way easily enough. Have you in many cases ordered the chock to be cut down?—I think I can say positively that in more cases we have had to put pieces on the chock than to take pieces off.

4639. Have you had experience of both?—Yes, I think I have made returns which show what the proportion was. I know over 50 per cent. were converged to 4° and upwards. I think, if my memory serves me right, that 56 per cent. of the lights we measured were screened 4° and upwards.

4640. A summary of your report has, I think, been already handed in*?—(*Produced and handed to the witness.*) Yes.

4641. "Of 369 vessels inspected, 115, or 31·2 per cent. were over 4°; 90 or 24·4 were 4°; 161 or 43·6 were under 4°. *Result* more than 55 per cent. were screened to 4° or over"?—Yes.

4642. That represents it?—That represents the facts of measurements.

4643. So that 55 per cent. were screened to 4° or over?—Yes, and I think I might say this, that we might have pressed our search in such a way as to increase that per-centage considerably. As a matter of fact we left out small vessels to a very considerable extent. They were all a large type of vessels. In small vessels the screens are apt to get bent and altered.

4644. I see there is a supplemental list at page 21. Is that also something for which you are responsible?—Yes.

4645. "List of vessels reported by the Board of Trade "by surveyors of the Liverpool and London districts, "showing the angle at which their side lights are "screened"?—Yes, I am responsible for that list.

4646. What is the date? When was that list made?—The 26th January 1893.

4647. That is to say, since the issue of the new rule?—Yes. I was instructed to take whatever assistance I needed, and go through the whole district, and report to the very utmost. I took two very experienced men, Captain Jeffrey and Captain Franks.

4648. And were all these lights which had not been altered since the 1892 rule came into force?—Your list would represent the state of things that existed before the new rule?—Oh, yes, before any of them were altered.

4649. Do you happen to know whether any of these were vessels which you yourself passed before 1892, and approved as satisfying the rule as to the inner edge of the lens?—I cannot say. My work is very varied, and I cannot recollect now.

4650. As to foreign ships, what is your experience of their screening?—Foreign steamers, or sailing vessels English built and owned by foreigners, have had the same screening, as far as I have been able to notice, as British ships. Most of those vessels have been built in England; and where they are not built in England they have followed out the English rules; but in regard to old wooden, Norwegian, Sweden, Danish, and Italian vessels, the screening has simply been anyhow. There has been no system in it. Almost invariably the screens are on the rigging, and they have no chocks at all, none whatever. The consequence is that the convergence is very much greater than in any English vessel that you can find. I do not mean to say that there are no exceptions; but I think I may say that at least 9 out of 10 old wooden Norwegian, or Swedish, or Italian, or Danish vessels, converge their lights to greater angle than British vessels; but all those vessels that have been passed over from the British flag to foreigners are put right before they pass.

4651. So that they follow the rule which for the time being was in force here?—Yes.

4652. That would apply, I suppose, to all the better class of steamers?—That would apply to all the better class of steamers.

4653. How do you actually take the measurement for the 4° angle?—We put a tape line across the ship, between the two sides of the screen, plumb down to the middle line—the centre of the ship—or we put a chalk line from mast to mast, or from the mast to the funnel, or anything that we can get in the fore and aft line. But it very often happens that we cannot get a fore and

* *See* Appendix 2, No. 2.

aft line at all—there are so many obstructions in the way—a pole compass, or a house or something of that sort. We try to get the fore and aft centre line in every conceivable way. Having got this centre line we take the distances from it at the fore end of the screen to its inside and at the position of the burner also. To the former we add the thickness of screen and chock, to the latter add thickness of screen and distance out from it to the outer edge of burner. The difference between these two sums is the convergence in the length of the screen. The angle this gives is obtained thus: Dividing the convergence by the length of screen we have the tangent of the angle from which we get the actual angle by reference to trigonometrical tables.

4654. (*Rear Admiral Andoe.*) We have it in evidence in several cases that there is a divergence, or rather a difference. in the screening of ships varying 5° or 6° perhaps; that is to say from 1° or 2° to 7° or 8°. I understand you to say that that is principally due to the size of the lamps, or rather to the fact that the position of the wick varies in its distance from the screen, or from the inner side of the lamp; is that the case?—I am afraid I did not make myself clear there. We have found in practice a very large range of angular convergence in actual measurements; the very first one upon this list is the "Achievement" which is 5¼ on one side and 7¼ on the other. What I meant was this, that if you put an 11 inch side-light in the same screen as a 9-inch lamp the angle would be much greater. That we find in practice; and it is a common thing in ships to carry two or even three sets of lights, and they vary in size and in the position they are in, so that the only thing we can do is to try it with all the lamps, but we have to accept one as the working set and it is upon that set that we base the 4° convergence. Whatever system you adopt—you will pardon me for saying so—unless it is in some manner arranged that every lamp that is carried shall converge to the angle you wish, it will never be done uniformly. For instance, I can mention the case of the "Argus" which was run into a short time ago and sunk. I visited her before she was towed to Glasgow for repair and she had two pairs of dioptric lens side-lights, and very fine lights they were, but one was 9 inches and the other one 11 inches, consequently the angle must have varied considerably.

4655. And consequently unless they are uniform sizes for all lamps and lanterns, whatever rule may be made for screening side-lights it will be of no use unless all the lamps correspond?—You might possibly regulate it by the lug at the back, keeping the 11 inch light nearer in-board.

4656. But that would not be practicable?—Yes, I think it could be done. It would require care; it would require a different kind of lampmakers to those that you have in existence now, because every tinker up a back street can make a lamp.

4657. But even then the man putting the lamp in position might make a mistake?—I mean this. Supposing that is a 11 inch side-light and you compare it with the 9-inch. The bracket on the 11 inch side-light would be about 2 inches further out than on the 9-inch side light.

4658. Do you consider that each class of ships should carry one type of side light?—It seemed to me to be impracticable to insist upon one defined size and one deemed type.

4659. Yet the whole of the divergence in the screening of the lights, appears to rest at the present moment upon the size of the lamp?—No.

4660. Because if you fix your screen for one particular lamp, and they put a different description of lamp aboard, we will say, and put it in the screen, the light will cross the bow at a different angle, will it not?—Just so. It would.

4661. Therefore the principle of screening from the inside the lens is not sufficient to regulate the angle altogether, because the distance from the inner edge of the lens to the wick itself, may vary in every lamp?—May vary in every lamp. That is quite true.

4662. And consequently the angle may vary?—Yes.

4663. At present we have not that?—No.

4664. How often do surveyors inspect the screening of lamps and ships after they have once been passed, do you think, to rectify any fault?—Well, I will say that it is the duty of the surveyors to visit vessels to the [illegible]

4665. What does that mean?—It means that if a vessel is away, say, several months, and there is nothing interferes, she can be certainly visited almost every voyage.

4666. And is it the practice of the surveyors to thoroughly measure and check the screens, to see that they are properly set as regards the angles?—Every time.

4667. Every time they visit them?—No, I should not say so.

4668. Then what is the object of their visit as regards side-lights?—The object of their visit is to take the accounts they have had on the previous occasions, and compare them, and see whether there is any alteration.

4669. How can the surveyor compare if he does not measure?—He sees the side-lights. He does not measure the screening every visit; but then you could not make much alteration in the screen without its being detected.

4670. Is it noted in the surveyor's book, the size of the chock?—Yes, the size of the chock is noted in the surveyor's book.

4671. Is that checked every time the surveyor goes on board?—I know I have seen it done many dozens of times. I cannot say that we do it every time.

4672. Because we have it in evidence that captains sometimes alter their chocks unknown to the surveyors?—Yes, I know that, and sometimes they get found out. The surveyors do not always make a report of small matters.

4673. Have you a copy of your surveyor's book?—Which surveyor's book?

4674. The book in which you make the notes when you pass a ship?—That is the kind of book we always carry; that is a new note-book (*produced*).

4675. But you have a printed form, have you not?—The printed form I was speaking of is filled up when the vessel was built.

4676. In that book you have certain questions and answers with regard to side-lights?—Yes.

4677. Have you got that here?—No, I have not got it here.

(*Rear-Admiral Andoe.*) Might we have one of those produced, Mr. Chairman?

4678. (*Chairman.*) Oh, certainly; this is only a note-book?—Yes, this is a note-book we carry round with us on all occasions.

4679. In which you write anything about the ship?—Yes.

4680. (*Rear-Admiral Andoe.*) With regard to the previous angle of screening; did you find that the largest and finest steamers that sailed from Liverpool were screened to the extent of 4° from the outer edge of the wick when they were examined in 1892?—In some instances they were not.

4681. Not at such a coarse angle?—Not at such a coarse angle.

4682. Were there many instances of that class of ship?—Well, I can only speak with regard to the largest class of ship from my knowledge of what my colleagues have done. I know from their reports that a large number of the highest class of ships had their screens converged to a fine angle.

4683. Finer than 4°?—Finer than 4°.

4684. Do you mean that those that were screened to 4° were rather a smaller and inferior class of ship?—Oh, no. I may say that in the course of my investigations they were more particularly carried on with regard to cargo vessels. Passenger vessels, of course, are specially appropriated to an individual surveyor, and he visits them every survey, the same man, from year to year. Therefore, my reports I think in every instance I may say, have always been in non-passenger vessels, but still very high-class vessels: for instance, Leyland's and some of the City vessels, and some of the Clan vessels—cargo vessels.

4685. And those vessels are 5,000 tons, I suppose, some of them?—Yes. The angle of screening varies considerably.

4686. Some more and some less than 4°?—Some more and some less than 4°.

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4687. (*Mr. Ismay.*) You referred just now to the transfer of British ships to foreign flags; have you had much of that going on at Liverpool?—Not a very great deal. There have been vessels transferred to foreign flags, but not to a very great extent that I am aware of.

4688. Are they chiefly sail or steam?—Well, I think there are considerably more sailing vessels go over to foreign flags than steamers—mostly wooden vessels.

4689. There are some iron ships too, I suppose?—There are some iron ships.

4690. Do you in any way survey them before they leave?—The survey of British ships transferred to foreign flags depends upon the Government to which they go. In the case of the Norwegian and Swedish Governments, they authorise their consuls to transfer vessels of 100 Lloyds or 100 A1., and the highest class of Veritas without a survey; but all vessels under 100 A1. and 33–11 L. of Veritas go into graving dock and are surveyed by us previously to transfer, whether they are sailing ships or steamers.

4691. Under what Act of Parliament do you do that?—I am not sure whether there is any Act of Parliament authority for it unless it be the Act of 1876. I do not think there is any Act; it is an international arrangement.

4692. Then in dealing with these vessels as regards side-lights you would see that they are all screened to the 4° angle before they are transferred?—Yes, in every instance.

4693. I suppose you have formed some opinion about the position of the side-lights in these ships?—I have formed certain opinions as a ship builder. My opinions are founded mainly upon the experience which I have gained in the Board of Trade and as a ship builder, and from my knowledge that there are certain safe places and certain unsafe places.

4694. In your opinion what would be the safest place for side-lights to be placed, supposing you had the power?—I should like to see all side-lights placed so that they could always be under the observation of the officer of the watch, and as high up as they could be reasonably carried.

4695. And with what reference to the masthead light?—I think, as far as that is concerned, as the great bulk of vessels, or a large proportion of vessels, carry their side-lights considerably abaft the masthead light, it must have been found in sea experience to be the best arrangement.

4696. Is not the tendency just now rather to put them into towers at the end of the forcastle deck?—I do not know of any tendency of that kind; I have never favoured it myself.

4697. But still, there are ships so fitted?—Oh, yes, I know there are ships so fitted, but I am certain of this: that a surveyor has no authority whatever even to bring pressure to bear upon them providing they fulfil other conditions.

4698. I am not finding fault, but as you have had a very large experience with regard to side-lights (I should think almost an unique experience), I am anxious to know what you think would be the best place?—Personally I should always prefer to see in steamers at sea the side-lights abreast the bridge and as high up as you can get them.

4699. And abaft the masthead light?—Yes.

4700. (*Captain Hallett.*) You were talking of the spare lights. Do you insist upon vessels carrying spare side-lights?—We have no authority to do anything of the kind.

4701. When you find them with spare lights do you test the lights in their places?—Yes.

4702. And if they do not agree with standing lights?—We cannot stop their use. We can and do point it out to the master.

4703. But you have no power to do anything?—We have no power to interfere.

4704. Have you any experience of these big triple wick lamps, have you seen any fitted?—Only very few.

4705. On gimbals?—Very few indeed, exceedingly few. I have seen them in a few cases inside of lighthouses.

4706. Hung on gimbals?—Yes.

4707. Can you tell me whether those vessels had any spare lamps?—Yes.

4708. Of the same pattern?—The same pattern, yes. I think there are one or two of those in that list in the same way. They were Glasgow ships that had them.

4709. (*Mr. Bolam.*) Would you kindly tell us how we can tell when a ship's side-lights were surveyed and the angle determined; in past time I mean?—We have to ascertain first of all her movements, where she was last.

4710. You did not quite hear what I was saying. I want to find out when the "Ardnamult's" lights were screened; what date, what place, and what the angle of screening was. How can I find it out from official documents?—Well, your quickest way to do it would be to write to the principal officer of the district where she hails from, and he would fathom it out.

4711. How would he fathom it out?—He would say the "Ardnamult" runs between certain ports, for instance, she runs to Liverpool, her screens must have been seen either at Liverpool or at Waterford, or the port she belongs to. At one port or the other the information could have been obtained.

4712. Then you could have obtained the information about the "Ardnamult"?—Yes.

4713. Which you have not done?—I do not say that.

4714. But I thought you referred to the "Ardnamult" as the first ship you mentioned?—No, I have not spoken about the "Ardnamult" before. It was the "Achievement" I mentioned.

4715. Then you do not know about the "Ardnamult's lights?—Oh, yes.

4716. Would you kindly put in definite information as to where and when her lights were screened previous to 1892, and what the angle of screening was; I mean the same "Ardnamult" that is in the Board of Trade list; there is no port of registry, and no official number, so I must leave you to say which it is?—87,081; she has iron screens on davits at the fore end of the bridge.

4717. But if you would simply kindly give me the last date and place previous to the 4° instruction being issued where she was examined, and the angle at which the outside of the wick crossed the chock?—The angle was $3\frac{1}{2}°$.

4718. And the place?—And the place was Liverpool.

4719. And the date?—The 1st February 1893.

4720. But is not that after the 4° instruction was issued?—Yes.

4721. Can you give me the date preceding that, and also preceding the date of the 4° instruction at which the same vessel's lights were examined, and what the angle was at which the outside of the wick was screened?—I cannot tell you that.

4722. Can that information be obtained?—It could be obtained at the port where she was built.

4723. For instance, you see all you can determine from this is, that on the 1st February 1893 you examined the vessel's side-lights at Liverpool, and found that they were screened to $3\frac{1}{2}°$?—Yes, that is it.

4724. You do not tell us that the vessel's light screens had not been altered before coming into your hands, and after the issue of the 4° instruction?—No, I cannot say that.

4725. In the instructions to surveyors of 1894 the words occur, "Upon visiting a vessel for the purpose "of inspecting her lights and fog signals, the sur-"veyor should first inquire of the master for the "certificate of inspection." Then follows what the surveyor is to do in the way of comparing the lamps, and so on, if necessary. What is that certificate of inspection?—Every ship should upon being first built and registered receive from the surveyor through the builder a certificate for the side-lights giving the full particulars. It is issued on paper fcap. size, full of particulars. It is called Form Surveys 69.

4726. An official document?—An official document. I may say I find in practice that the owners rarely get that document.

4727. Why?—I cannot say.

4728. But who issues this certificate?—The certificate is issued by the surveyor, but he issues it to the

builder. You see the surveyor does not recognise the owner in the matter at all. He gets his application from the builder. The builder should hand over this document.

4729. Because you see the "Ardnamult" is one of the vessels which Captain Wade declares was screened so that the outer edge of the wick was screened to the outer edge of the chock; and the surveyor at Liverpool finds it screened to 3½°, and it would be interesting to see if Captain Wade had the slightest foundation for his statement. You have your survey, and I would like to know whether Captain Wade had any foundation for his statement?—He had not the slightest foundation.

4730. You only say that. But do not you see your evidence is only negative; and it is perhaps rather hard on Captain Wade in his absence to say there is not the slightest foundation for his statement?—The surveyor reported that he *found* the screen converged to 3½ per cent. on his visit on the 1st February 1893. He did not converge them to this angle, they were so before his visit.

4731. But in fact that certificate of inspection was issued when the ship was first built, and issued through the builder?—Yes, and it is very seldom that the owners have it. I do not know how it is.

4732. Captain Wade has declared that the angle of screening of the "Creaden" at the present time is 8° from the outside of the wick?—Yes.

4733. Your evidence about the "Creaden," if I heard it accurately, is that the screen is an inch out of the vertical line. It has $\frac{3}{16}$ths of an inch play?—$\frac{3}{16}$ths.

4734. And that the lamp itself has half an inch play?—Yes.

4735. If you happened to inspect the "Creaden" with all these faults at one end of their limit, and Captain Wade happened to inspect them when at the opposite extreme of their limit, the difference sideways may be about 2 inches; therefore he may have got his extra 4° in that way. If you add the $\frac{3}{16}$ths to the ½ inch, and to the inch, which will give you the maximum possible displacement between the two limits of the wobbling, you will see that Captain Wade would get something like the extra 4°. It is possible the difference may have arisen in that way. The surveyor may have been inspecting the wobbling at one extremity, and Captain Wade may have inspected it at the other?—As a matter of fact the weight of the screens keep them outboard to a certain extent. The over-hang draws them out. Then, again, the over-hang draws out the screen itself. Then you have to account for the wobbling of the lights. Now, I said to the captain "put your light as you always carry it," and he lashed it as he pleased, and I measured it. I say that you cannot by any possibility measure lights accurately under such a system existing as they do. It is quite impossible.

4736. But at any rate it is quite possible that part of Captain Wade's large angle may have been honestly arrived at?—Oh, yes.

4737. Then you say the practice of the Board of Trade surveyors up to 1892 was uniform. You mean uniform to this extent, that they brought the inside of the lens fore and aft with the outside of the chock parallel to the middle line?—Yes.

4738. Sir Digby Murray and Mr. Samson have referred to the diagrams in the instructions of 1868?—Yes.

4739. Are these diagrams of 1868 merely diagrams, or are they drawings drawn to scale? There is a very considerable difference between the two things?—I believe they are drawn to scale, but even if they are not drawn to scale; they are illustrative diagrams.

4740. Yes, all diagrams are illustrative; but in 1868 it was a very common practice even with scientific men to have a diagram which was not to scale, whereas now-a-days, it is the rule with people even when they draw mere diagrams to draw to scale?—I believe I am correct in saying that these diagrams were drawn by an engineer surveyor in the chief surveyor's office in 1868.

4741-2. And, therefore, presumably drawn to scale?—Yes, but the length of the screen was in advance of the lantern in these diagrams.

4743. Then you think that the screens in that diagram drawn to scale were 36 inches in advance of the lantern?—Yes.

4744. Not of the wick?—No, of the lantern.

4745. Sir Digby Murray has handed in these diagrams here with a scale marked upon them, and the length of the screen ahead of the wick varies from 48 inches to 44 inches. *This* is the paper which Sir Digby Murray has handed in to us just recently. Will you kindly check whether I am right or not (*produced*)?—All the screens are one length. You see, this is to show the way the convergence is to be taken and *that* line is well within the inside of the wick, but as a matter of fact they are not to uniform scale in all their details, but I think what they are and were intended to show could not be mistaken.

4746. Is this an exact copy of the instructions issued, apart from the measures put upon it?—*That* is an exact copy of *these* I have in these instructions from 1863 onwards.

4747. And to the same size?—And to the same size.

4748. So that if *these* are drawn to scale the longest screens here must have been 48 inches ahead of the wick?—Yes, but these screens have been all made to include the chocks in Figs. 4, 6 and 7.

4749. So that if the surveyors trusted these as drawings to scale the screens would be a good deal longer than 36 inches?—They *are* very often found 50.

4750. Previous to 1892?—Yes.

4751. Is that a fact which the Committee may take for granted?—Yes.

4752. Mr. Samson said in answer to a question of mine that the screens *might* be longer than 36, but that they *would* not be found to be so as a fact. I do not remember his exact words, but I give the general sense of his answer?—I do not say that there is a large proportion of them, but we have upon occasions found them upwards of 5 feet.

4753. (*Sir E. Harland.*) Was that in a British ship?—Yes.

4754. A steamer or a sailing ship?—Both steamers and sailing ships I have found so.

4755. (*Mr. Bolam.*) Then in reference to the position of towers about which there seems to be some difference of opinion, the placing of the side-lights when forward. You say the Board of Trade have no power to order side-lights to be placed anywhere?—Providing they show properly.

4756. And that they do not insist upon the lights being placed forward ahead of the masthead light?—No.

4757. In the instructions issued previous to 1892 are the words that "the lights be placed as far forward as practicable"?—Yes.

4758. And then later on "towers should be as far "forward in the ship as practicable"?—Yes.

4759. Is it not likely that the Board of Trade surveyors should have taken that to mean that the towers should be placed as far forwards as they could possibly get them, and decline to give a certificate where it was not so?—I do not think so; I have not been able to ascertain a case of that sort, and I think the instructions of 1892, at the bottom of page 9, provides for overcoming all possible obstructions by increasing the height of the light, as also by extending it outboard on outriggers.

4760. In the Liverpool district you yourself made out the per-centage of vessels in which you have had to increase the angle as 43·6 per cent. of the entire district?—Yes.

4761. So that at any rate in the Liverpool district a very large number of the vessels you inspected had to have the angle increased?—Yes.

4762. So that there were 43·6 ships that had the angle increased for 31·2 that had the angle decreased?—Yes, of the vessels selected.

4763. Therefore, judging from that figure there is some excuse for the popular view that the Board of Trade have increased the angle?—No, that is an unjustifiable view. I think to judge with fairness you must include those that are at the 4° angle.

4764. I did not put my question that way. 31 vessels would have the angle lessened, and 43 would have the angle increased. Of course 24·4 would be let alone.



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Therefore in your district there would appear to be reason for the popular view that the Board of Trade have increased the angle?—It is a case of the representation of the minority, but not fair, I think, to say of the angle has been increased for the majority of ships.

4765. (*Mr. Scrutton.*) How many surveyors are there in the Liverpool district who examine side-lights?—Every surveyor in the district?

4766. How many?—There are 15.

4767. How many vessels do you think a surveyor could examine in a day, to do thorough justice?—It depends to a great extent upon the difficulties he has to encounter. It might take him two hours to do one ship, and he might get over it in half-an-hour. I have been on board many ships, that I could not finish in two hours.

4768. What would you consider the average of a fair day's work for a surveyor?—It is an unsafe thing for a surveyor to go on board a ship and do nothing but look after her lights, because the next morning he may be brought up with some question about something else about the ship which he may be expected to answer. But if he had the lights alone——

4769. I do not want to occupy time. My question is this. You are acquainted with the work a surveyor has to do. He has to do certain duties, and he has to do duties as regards lights as well. What would you consider a fair day's work for a surveyor at Liverpool?—I should say he would be very busy if he were to do eight vessels.

4770. And he works from 10 to 4, does he not?—10 to 4 are the office hours.

4771. What holidays has a surveyor?—They have 28 days in the year.

4772. You have stated that you consider that a surveyor visited every ship almost every voyage?—No, I say that a vessel going long voyages, or a voyage of several months, should be visited every voyage, and so they are.

4773. But you made a statement, I have got it down here, "Certainly visited almost each voyage?"—Yes, I mean all sea-going vessels, not coasting vessels that are in and out once or twice a week.

4774. You state also that there are certain surveyors who are told off to passenger ships, and they visit them every voyage?—Yes. In the case of emigrant ships.

4775. That is once a year?—On renewal of yearly certificate.

4776. They do not visit them between?—Not unless in case of accident, or in case of any casualty.

4777-8. Is there any reason to think that vessels are visited once a year?—Oh yes, certainly, a passenger ship is always visited once a year.

4779. Not a passenger ship, but other ships?—I should say myself, in my experience, that there are very few ships that escape being seen several times a year.

4780. My report from my marine superintendent is that out of say nine vessels, they have only visited two?—They do not come to Liverpool, and I do not know anything about the London district.

4781. But is it your candid opinion that every vessel is visited once a year?—I think so. I know it is the case in Liverpool.

4782. With regard to this list that you published here. Within what period was this list prepared; was it all done within a twelvemonth?—My instructions were to survey the whole ports straight off.

4783. And you did it all within what time?—Some of those vessels had to be seen half a dozen times before we could finish them. Certainly they were done within a month.

4784. How many vessels did you do all together; I have here 142 on page 4; would that be right:—"Liverpool district 169 vessels inspected"?—Yes, that is it. I sent in that list.

4785. What would that represent in your view of the number of vessels that were in in port during that time? Would it be a third?—First of all it excludes all passenger ships; it excludes all small coasting vessels—probably it is about one third—yes, perhaps it is about one third.

4786. I see in one list of 142 that you gave that in 34 of them that is 24 per cent., 34 out of 142, the port light and the starboard light are angled at different degrees?—Yes, we do find that.

4787. Is there any reason to think that that is a fair representation?—It is an exact representation.

4788. Exact representation with regard to 142, but have you any reason to think that that is a fair representation of the bulk?—Converged to a different angle?

4789. Yes?—I find here in this list numerous vessels, the "Achievement," the "Hector," the "Ariadne."

4790. There is no occasion to occupy time; it is a simple question; out of 142 vessels, in 34 of them the lights are at different angles—that is 24 per cent. Have you reason to think that is a fair representation of the vessels that come into the port?—The entire vessels?

4791. Yes?—Oh, no, there is not that variation.

4792. Then upon that ground this is not a reliable table?—It is reliable as to the fact of the individual ships it refers to, but if you take these proportions and apply them to the whole of the merchant service it might be very misleading.

4793. (*Sir E. Harland.*) You are the Chief Surveyor in Liverpool?—Senior Surveyor.

4794. Of course, you have a considerable number under you? You have referred to the lights in lighthouses; have you, yourself, checked the screening of those lights in lighthouses?—Oh, yes, I have done the greater portion of that myself.

4795. Did you find that it was easier or more difficult to check the screening in lighthouse than in the ordinary exposed lights?—I found it much more difficult.

4796. What was the cause of the difficulty?—Sometimes the smallness of the lighthouses and the difficulty of getting inside them—the difficulty of tracing the exact position of the burner inside of the lighthouse. It had to be measured and then checked outside in order to make sure.

4797. Then the first difficulty was, in ascertaining the true position of the burner in the one light relatively to the other, and relatively to the centre line of the ship?—Yes.

4798. Then would you recommend it as probably much conducing to the facility and accuracy of such measurements that each of these lighthouses should have a hole?—A door?

4799. Yes, or a hole of 1½ inches or 2 inches on the other side, opposite to the other lighthouse, so as to enable you to measure through?—Yes, but many of them now are having doors.

4800. Are there any in existence now with doors?—Yes, some of them, but only a small proportion.

4801. When did they begin to put in these doors, recently?—Not in reference to any measurements, but they put the doors for the facility of getting in and out.

4802. Then, it has the result of giving facility for measurement?—Yes, it does.

4803. Then, quite independent of the matter of getting in and out of that door, you will observe many lighthouses are entered from below?—Yes.

4804. Then, purely with the idea of enabling the surveyor to measure accurately the position of the wick in the lamp, you would strongly advise there should be those openings, solely with that object?—No, not solely, but I would recommend it because it is much easier for the officer of the watch to examine the lights from the deck than it is to go underneath it.

4805. That is the matter of the light burning. Now with reference to the screening of the lights would you recommend it for that purpose, for the matter of checking the measurements?—Oh, yes, I should be very glad indeed to see it: it would be very much more satisfactory.

4806. Would you also recommend surveyors in future should use laths for measurement in place of tape lines. I merely mention this from a circumstance that you know of?—I know that the tapes are not to be absolutely relied upon; and I think if you use laths, or steel pipes, you would get a much more accurate measurement, and more satisfactory.

4807. Then you referred to the screen sometimes being taken for granted as being fore and aft of the ship, and the screens being put there by the builder in the first instance fore and aft. Are you inclined to accept that position as a permanent one. Do you think there is no chance of those screens being struck by a sea and considerably shifted or bent?—They do constantly.

4808. Are you aware of some of these screens being of iron and rivetted to the lighthouses?—They are generally iron in these lighthouses.

4809. Do you know there are some that have no stay to them, under the idea that their own strength would be sufficient to maintain a true fore and aft position?—I have not met with one without a stay.

4810. But you think it would be desirable to have them tested?—I have seen those screens bent in, even with stays.

4811. Is it your opinion that the screen itself should be the first thing that should be checked as to its fore and aft position?—Yes; really and truly I should like to see something done to avoid the chock altogether.

4812. Would you go in for the screen being at an angle altogether, and if it is iron, being stayed so as to avoid the chock?—Yes.

4813. So that if there was no chock and the owner or the captain chose to change the side lights how would you then proceed to adjust it?—The only way I know to adjust is to regulate it by the lug on the back, shifting the lug in and out.

4814. That is to say, having one pair of lamps with a lug in a certain position?—Yes.

4815. And then having another set of lamps of another size, and to have the lug in such a position that the centre of the wick would converge in the same way?—Yes.

4816. And are you an advocate to taking the measurements to the centre of the wick, or the outer edge, or the inner edge?—Well, I think all things considered it is better to take it to the outside edge.

4817. Do you think it would simplify it or not, if the lamp manufacturers had some standard to go by to the effect that certain sized lamps should have a certain distance from the inner edge of the lantern to the centre of the wick, or would you say to the outer edge of the wick, or the inner edge of the wick?—The maker of the lantern if he wants an efficient lantern must put the centre of the wick to form the centre of the circle of his lens and his reflector. That fixes it really and truly; he has not got any choice about the matter.

4818. That is with reference to the lens, but with reference to the distance from the light to the inner face of the lantern, which is a matter which comes in in regard to the screening, what do you say about that?—I think, seeing that burners vary in size, and in worth, the outer side of the burner is the better thing to go by but whether you could make it an uniform distance inside or not I very much doubt.

4819. Supposing that, as we find in experience, the larger the ship generally is the larger the lamps are that are used, would you be disposed to recommend for the future guidance of lampmakers and Board of Trade surveyors that there should be say, two, three, or four standard sizes of lamps recognised, and that in each of those standard sizes of lamps there should be a certain distance, say, from the centre of the wick to the inner edge of the lantern; then if a shipowner chose to have a second or third set of spare lamps the Board of Trade should make the stipulation that they must all be of the one size for that particular ship?—Well, I should like to see a regulation to that effect.

4820. So that in a ship, say, with one set of first-class lamps, or first-class sized lamps, that there should not be a possibility, in case anything happens to the first-class sized lamps, of the officer of the watch changing them, and keeping others of a different size with a different distance between the wick and the side of the lamp?—Yes, I think myself that that can be regulated.

4821. Do you think that that would be a desirable way of regulating it?—Yes, I do.

4822. Do you think, although an owner now has the option of taking as many duplicate sets as he likes, if he takes them, you would advise that the lights should be suitable for the purpose for which he takes them?—Suitable for the fixed fittings that exist in the ship.

4823. Then how many sizes would you recommend for lamps? I have only suggested three or four, but how many various sizes in your experience are there at present in use. Supposing you had a selection before you as to sizes, how would you class them?—Well, I think 9-inch side-lights are small enough; they are rather too small. On the other hand, 11 inch side-lights are very big, heavy, and costly. I think if you made 9 inches the minimum size, and 11 the maximum, that would do.

4824. What would you come to after that?—I would not have anything smaller than 9 inches.

4825. But would you require a small coasting cutter or smack to have 9-inch ones?—Yes, most decidedly; it is the rule, and has always been the rule.

4826. Are there any smaller than 9 inches in use?—No, never.

4827. Then is it the case that there are only two sizes used now?—No. The minimum is nine, but the maximum has no limit.

4828. But what is your experience of the maximum size?—I have seen a few 12 inches.

4829. What is the maximum?—Do you wish me to give an opinion as to whether there should be a maximum size?

4830. I am asking you first, in your experience, what do you consider is the maximum?—12 inches.

4831. And in your experience what is the minimum size?—The minimum size is 9 inches.

4832. Are there no river craft with less than 9 inches?—Not that I am aware of, unless they are unregistered.

4833. They do not come under the Board of Trade unless they are registered?—They do not come under the Board of Trade unless they are registered.

4834. Then you make out by that three sizes; then would you recommend that for each of these sizes there should be a standard distance from say the centre of the light to the inner edge of the lantern?—But you would have to have others as well.

4835. But with regard to this question first; I am merely keeping in view the fact that if you ship lamps of different dimensions in the same screen you would have different angles of screening?—Yes, I do not see how if you put that screen to show right past this light you can have an 11 or 12-inch light to converge to the same as a 9 inch. If you put that lantern up against the screen you cannot have a fixed screen for the same distance from the centre of the lantern.

4836. I am confining you at present to the case of a ship which has 12-inch lights on board; would you recommend that the spare lights, if they had any on board, should measure the same distance from the centre of the wick to the inner edge of the screen?—Is that all at 12 inches?

4837. I am still sticking to the 12 inches?—Yes, certainly, if it is practicable.

4838. So that in this ship the one set of lights should measure the same as the spare set of lights and the screening would be right?—Exactly.

4839. Then would you recommend the same sort of principle in the 11-inch?—Yes.

4840. And that whatever size lantern the owner takes in the first instance, all his spare lanterns should have the same measurement?—Yes, but what we find in experience is not that they carry two of 12 or two of 11, but that they carry one of 9 and one of 11, and one of 12.

4841. Then, supposing they carry one of 9 and one of 11, and one of 12, so long as in each of those sizes they had the same distance from the centre of the wick to the inner edge of the lantern that would do?—But that is impossible.

4842. That is for the lampmaker, is it not? What is the impossibility?—You see *this* lens has a greater curve.

4843. But are you aware that the curvature of the lens has nothing whatever to do with the light?—Yes, exactly so, but in that case in bringing the lens over *here* you have a long black space *there*.

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4844. But assuming the wick is placed in the necessary position to show two points abaft the beam, you would be in favour of the lamp measuring the same from the centre of the wick to the inner edge?—Yes, certainly, that is a very desirable thing.

4845. I noticed that in your evidence you mentioned that you thought that measuring from the inner edge of the lens was the same as from the outer edge of the wick?—Oh no, I did not say that.

4846. That the inner edge of the lens, so far as screening was concerned was the same thing as the outer edge of the wick?—I could not say that.

4847. I merely put this question to you; are you aware that the inner edge of the lens varies so much in different lamps?—Yes, it does.

4848. As measured from the inner edge of the lantern?—Yes.

4849. (*Chairman.*) I am afraid I have misunderstood you, because I rather did understand that before 1892 the rule was to screen to the inner edge of the lens?—Yes, before 1892 the rule was to screen to the inner edge of the lens, but I did not say that it corresponded with the inner edge of the burner.

4850. Then I understand you also to say that in practice, speaking generally, before 1892, the angle of screening was about the same as it was afterwards?—Yes, that is so.

4851. Therefore screening to the inner edge of the lens must have given about the same result as screening 4° to the outer edge of the wick?—Yes, that is so, but then the wick is not 2½ inches, it is only an inch. Therefore the inner edge of the wick is an inch and a half from the inner edge of the lens.

4852. (*Sir E. Harland.*) My question was to ascertain from you whether prior to 1892 you did not treat the inner edge of the lens as the source from which the light came, and the point which must be taken into consideration when you are screening?—Yes, that is so.

4853. Are you aware—or have you since been made aware—that the inner edge of the lenses vary so very much in relation to the centre of the wick?—I know it varies a great deal.

4854. Are you aware that the inner edge of some of the lenses come much nearer to the edge of the lantern than other lenses?—Yes, but it does not vary so much as the position of the wick does.

4855. But did you prior to 1892 go by the inner edge of the lens rather than by the wick?—Yes, if *that* is a piece of brass *there*, *that* is the point we take (*describing on the plan*).

4856. Then if you take *that* piece of brass, are you aware that that line has practically nothing to do with the wick?—It leaves it outside of it.

4857. Does not it leave an immense distance outside of it?—Yes, it gives the convergence.

4858. Then if your object was screening the light in any case with regard to the lens, was not that a very irregular method of doing it?—It was a method which gave a variety of angles.

4859. (*Rear-Admiral Andoe.*) A copy has been handed in of a "Form of Report to Board of Trade, made by "officers testing ships' lights." Perhaps you recognise that certificate?—That is it.

4860. And the next page?—Yes.

4861. That is in use by the Board of Trade, is it?—The note-book called Surveys 64 contains, on page 20, questions similar to those you refer to; it has been slightly modified lately, but a similar one has always been in use.

4862. How long has it been in use?—A similar one has been in use as long as I can remember.

4863. It says here, "Is the light visible at a distance "of two miles on a dark night with a clear atmosphere?" What steps did the surveyors take to satisfy themselves upon that point, and to answer that?—Well, very little.

4864. Was it done in practice?—It has been done occasionally, but very rarely.

4865. Does that apply to the next question? "Does "the light show over more than 10 points from right-"ahead, and if so, how many points more?"—It was checked by measurements.

4866. The next question is: "Is the light shown a "uniform and unbroken light in colour and power over "10 points of the compass, namely, from right ahead "to two points abaft the beam?"—That is a matter of measurement.

4867. Is it?—Yes.

4868. "Uniform and unbroken light." That would be observation rather?—Well, that can only be ascertained by sighting it forward.

4869. Has it been the custom to check that by observation?—It has.

4870. In every case?—In every case.

4871. By placing lamps in position?—By placing lamps in position and sighting them right round.

4872. By night?—Not by night.

4873. How can you do it by day?—You can see by day that it is free of all possible obstructions. We have very few opportunities of doing it at night.

4874. (*Chairman.*) Do you understand the "uniform and unbroken light" to mean merely free from obstruction?—"Uniform and unbroken" means free from obstruction, and that the colour of the light is fairly uniform from right ahead throughout, and that it is not in blotches of various degrees of colour.

4875. Then you do not understand that to refer to the cutting off any part of the light by a screen or chock?—It refers to the range of light from where it is cut off by the screen to where it is cut off at two points abaft the beam; between these it should show a full and unbroken light free from all existing and possible obstructions; the lens being of uniform colour throughout. The fact is these lenses vary immensely; and very poor lenses are so badly coloured sometimes that they have to be rejected.

4876. (*Rear-Admiral Andoe.*) Then it may be understood that this first part of the report, namely, "Is the "light visible a distance of two miles on a dark night "with a clear atmosphere" is practically a dead letter?—It is practically a dead letter so far as this; that if the instructions in other respects are fulfilled, we take it that this is fulfilled also.

4877. But you do not take it by observation?—We have no means of doing it.

4878. (*Captain Hallett.*) May I ask what you mean by a 10 and a 9, and a 12-inch light?—I do not quite follow?—It is the width of the side of the lantern.

4879. It has nothing to do with the radius?—No, it refers to the width of the lanthorn's side.

*Capt. W. Barker.*

Captain Wilson Barker called and examined.

4880. (*Chairman.*) I think you have been kind enough to prepare a memorandum showing the result of certain experiments?*—Yes.

4881. Will you hand that in?—Yes; and a diagram. And *those* are photographs showing the lamps, and the photograph of the flame (*produced*).

* Appendix 11.

## Wednesday, 17th July 1895.

PRESENT:

THE RIGHT. HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain CASTLE.
Captain HALLETT.
Sir EDWARD HARLAND.
Mr. ISMAY.

Mr. C. HIPWOOD, *Secretary.*

Sir DIGBY MURRAY recalled and examined.

*Sir D. Murray.*

17 July 1895.

4881*a*. (*Chairman.*) I think you wish to hand in some papers?—Yes. The first is a further list* of vessels, showing the angle to which their lights were screened when the new rule came into force. Each of the original reports is initialled by the surveyor who took the measurements, so if any measurement is at any time disputed we can always trace it and produce the surveyor who made it and reported it. I think there has been some slight inclination on the part of some of the witnesses to think that the Board of Trade surveyors do not always act with perfect *bona fides*. But it is quite evident from those lists that they do. The revelation to the Department as to the lack of uniformity in the screening of side-lights was most unwelcome, and the surveyors in making their report as to the way in which they were screened, were perfectly well aware that it did not tend to their advantage or to the advantage of their Department.

The next paper is a report from the Glasgow surveyors with reference to some statements that were made to this Committee by Mr. Harvie.† It is hardly worth while to print the whole of it, but if you will allow me, I will say shortly what it is. First of all, I may perhaps be permitted briefly to state that the Marine Department issue no private instructions of the character suggested. Any person can buy the instructions, and there are no private instructions whatever issued. The surveyors report that all they required of Mr. Harvie was that the burners should be so fixed as always to remain in the same position in the lamps. They found that the burners moved in the lamps, and therefore it was no use their screening, say to 4° from the outer edge of the wick, when the next moment the burner might be moved in some other direction. And all they required Mr. Harvie to do was to so fix the burners that they should not alter their position.

Then Mr. Harvie told you something about the experiments with the lenses for the electric light.‡ Subsequent to the experiments§ which were carried out by the Board of Trade at the instigation of the Russian Naval Attaché, the Admiralty carried out a series of experiments; Mr. Samson attended them, and I am informed that they practically agreed with our own results. In consequence of these experiments we obtained glasses of the necessary tint for the electric light, and at Admiral Wharton's request I furnished them to the Admiralty. The Admiralty also made some experiments as to the tint of slides for oil lamps; they were attended by one of our people, and we obtained glasses for the information of our surveyors that exactly correspond with the tints adopted by the Admiralty. There is a light green and a dark green, and any tint between the two we think may be accepted. In the same way there is a dark red and a light red. They exactly correspond with the sealed patterns of the Admiralty.

4882. (*Chairman.*) I think Mr. Harvie produced a bottle of some liquid which gave the right tint for the green slide?—It is very possible he may have used that in getting out the different tints for the glasses. The Committee can if they wish see a pair of slides which were sent to the Board of Trade by the Admiralty.

4883. There is Mr. Harvie's bottle (*produced*)?—Well, that, I fancy, corresponds with the lighter of the two greens, and the lighter of the two greens answers extremely well for oil lamps; but it does not answer for the electric light; it is too pale.

4884. (*Mr. Ismay.*) The light is too strong?—Yes, that is the reason why we have recommended a separate tint altogether for the electric light.

4885. (*Rear Admiral Andoe.*) The slide for electric light is a darker green—a bluer green?—Yes, and rather a different green. These slides I have here are supplied by Chance Brothers (*produced*).

4886. (*Captain Hallett.*) Are these for the electric light?—These are for the electric light.

4887. (*Mr. Ismay.*) All the same?—All the same; only put up in parcels of four for convenience sake to send to the surveyors.

4888. (*Chairman.*) These, of course, only profess to be for the oil lamps?—Yes. Mr. Harvie was very indignant with us because we would not pass the greens for the electric light also. There is a little animus about it.

4889. (*Mr. Ismay.*) Is there not a practical difficulty arises where you have a separate shade for the electric light and the spare lamp is an oil lamp?—I cannot answer the question because all we can deal with are the pair of lamps which are put in their places for the use of the ship.

4890. But when the electric light is fitted it is usual, I think, if not necessary, to carry spare oil lamps, so that in the event of the electric current being interfered with they could substitute the oil lamps?—Exactly, but the oil lamps would be complete in themselves.

4891. But supposing they were fitted into lamp boxes into which there were fixed shades for the electric light?—No, the oil lamps would be complete in themselves, slides and all.

4892. (*Rear-Admiral Andoe.*) But are not sometimes lamps put into the lighthouses?—

4893. (*Mr. Ismay.*) I think I am wrong, if I may explain. If they substitute the oil for the electric, it is quite another thing altogether?—Quite, but even the darker of the two greens if it is used with a powerful electric light looks almost white. I have handed in our report, but the Admiralty have a quite independent one; they carried on experiments of their own at which Mr. Samson was present.

4894. (*Sir E. Harland.*) May I ask whether the coloured glass which suits the oil would not at all suit the electric light?—No, it would not.

4895. Then if the electric light, by accident, or necessity, had to replace the oil in the same lantern, and with the same lens——?—It would show with a powerful electric light, dependent upon the candle-power, under some circumstances almost white. It was in consequence of the Russian Imperial Yacht having nearly come into collision owing to the effect of the electric light upon the lens that the Russian Naval Attaché was put into communication with me, and asked me to carry out experiments to see what the result would be. I attended them.

4896. (*Rear-Admiral Andoe.*) It was an arc light, was it not, which was used in the Russian Imperial Yacht?—I cannot tell you. I see that Mr. Harvie said so. Our experiments were carried out in one of Sir Donald Currie's ships.

4897. (*Sir E. Harland.*) With the incandescent lights?—Yes.

4898. (*Rear-Admiral Andoe.*) Supposing I am correct in saying that the towers in which the bow lights are put, have coloured screens to them, and are generally

* Appendix A, No. [illegible]
‡ See Question [illegible]
See Question [illegible]

† Questions 3666-8.
§ Appendix 13, No. 1.

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fitted with electric lights, are frequently made so that they have the means of substituting the oil lamp for the electric light in them, have you never come across, or heard of any such fittings?—I never heard of the fittings being used for the two kinds of lights; but you must remember that I personally do not carry out any of this work. I am resident at the Board of Trade; the actual work is done by the surveyors; but as questions crop up they are referred to me.

4899. But you are sure to have heard if a question of that sort arose?—I have heard of no difficulty, but I have heard of this; I know that in some ships there have been as many as three sets of lights, and when they were examined prior to the re-screening every pair of lights was found screened to a different angle.

4900. I think Mr. Harvie contends (and he has fitted, it appears, a great number of electric lights in ships), that the objection to having separate shades to the electric light is that when they have to substitute the spare oil lamp, which is expressly fitted to go into the box, it would give a different result?—Well, all I can say is that I should think that would be a lesser evil than to have an electric light fitted in such a way with such a light green slide that it would under certain circumstances appear to have no colour at all, or next to no colour.

4901. In that case, if the electric light passed through a very light green lens it would give almost a white light, would it not?—Yes, but even the darkest of these two colours—that was the colour that we tried with the electric light (*produced*)—mentioned in our report, at certain distances and with certain candle-power showed almost white.

4902. Then in the other case, if you were to fit the electric light to a dark green which is suitable for it, and you were to substitute an oil lamp behind that, you would almost obscure the light?—Most undoubtedly the light would be decreased very seriously. I do not think the coloured slides for the electric light ought to be used for the oil lights, or the other way about.

4903. Then would it not be desirable in the regulations to set out clearly that in the case of a light being changed either a totally different lantern should be used or that the slide should be changed?—I think in practice it is always the case (I cannot speak positively to it), that where oil lamps are used they have their own colouring quite apart from the electric light.

(*Mr. Ismay.*) I think the class of ships that use the electric lights have the stand-by light quite independent and separate; very often in an entirely separate position.

(*Rear-Admiral Andoe.*) I will produce Mr. Harvie's pamphlet; it is a very important question to seamen—if they have such a dark shade that it would obscure the green light almost entirely.

4904. (*Sir E. Harland.*) Whilst the Secretary is looking for that, might I ask this question: You have a standard colour for the oil light?—Yes.

4905. You also have a standard green light for electric lights?—It is entirely separate; the four slides you were looking at correspond with the Board of Trade standard for the electric light.

4906. But is this a sufficiently dark colour (*referring to a slide produced*)?—Yes, it answered admirably; this colour represents, with an electric light behind it, the lightest of the two shades of green which are used for the oil lamps; but I am afraid that Rear-Admiral Andoe thinks that the Board of Trade have more power than they really have. We recommend these things, but I do not think we have any power to insist on them.

4907. (*Chairman.*) But I dare say Rear-Admiral Andoe's view is, and certainly it is mine, that the Board of Trade ought to have the power?—I think they ought.

4908. (*Rear-Admiral Andoe.*) I do not cast any reflections upon the Board of Trade at all?—No, I did not think you did, but we have not the statutory power.

4909. The question I ask is whether it would not be desirable that the Board of Trade should have the power to enforce the regulations, for the safety of ships at sea, as to fitting their side lights?—Yes, and I have been pressing over and over again upon every successive Assistant Secretary of the Marine Department of the Board of Trade that the Board of Trade should have a range for testing these lights and proper people appointed for conducting the experiments. The artillery officers have been very good recently, and given us every opportunity, but they cannot be always doing it. It sometimes interferes with their own work, and I think that if any real progress is to be made in the future, the Board of Trade ought to have a range on dry land in which these experiments might be carried out.

4910. Is there any reason why lamps, before being accepted by the owners, should not be stamped by a hall-mark, to show that the intensity of the light through the lens, &c., had been passed by the Board of Trade, supposing the necessary means were there; a photometer room, for instance, properly fitted?—That is what I have myself proposed several times, but it means money.

4911. Such, I mean, as is invariably done with the lamps in the Navy?—I think it is very desirable, but it means money; and you may readily understand how very difficult it is for the Board of Trade to get money when you find the sum of money granted to me for the experiments in 1891 was only 25*l.*

4912. The point is whether it would be desirable, if it were not a question of money?—I should say it is infinitely desirable that the Board of Trade should have a regular range, and that these experiments should be carried out, and that the lamps should be stamped; every different set of patterns ought to be stamped.

4913. (*Mr. Ismay.*) Is not that the case with chain cables for ships?—Yes, it is.

4914. And anchors?—Yes.

4915. Something on those lines?—Yes.

4916. I think if it is important for cables, it ought to be more important for lights?—I think it is very important.

4917. (*Mr. Bolam.*) Before you leave the question of a standard light, would you kindly say whether two standards would be sufficient, one for oil lamps and the other for electric lamps?—I think that is a question which would have to be gone into very fully, but what I propose is—and I drew up a scheme some time ago, which was never carried into effect—that the different lamp makers in the United Kingdom, or the principal ones, should be asked to meet in conference and draw up rules. I think if we were to establish a hard and fast rule which would interfere with a number of these manufacturers it might lead to trouble, but I think if the trade were taken into the confidence of the Government Department superintending the matter that the whole thing might be arranged.

4918. (*Chairman.*) Now we will come, if you please, to those statements in the evidence already given, upon which you think it right to make certain observations. I think you desire to refer to various questions and answers, and I think you prefer to refer to them rather as questions and answers in the evidence than as having reference to the persons by whom they were actually made?—I wish, so far as I can do so, to keep clear of personal remarks of every kind.

4919. In Questions 1087 and 1088, a statement is put into your mouth with regard to the recommendations made by the Washington Conference—I do not think it is necessary to quote them at length—you desire to say something about that, I think?—Simply this; as I had never read the protocols it was perfectly impossible for me to make any such statement. I should have had to draw entirely upon my own imagination if I had done so. The statement has been made by somebody else, hence the misapprehension. I was asked, as I think I state further on, to deal with the resolutions arrived at at Washington so far as they concerned the Marine Department, and I never read the protocols; it is rather a big book to wade through. I only read the resolutions that they arrived at.

4920. I think you may have said that you did not believe it to be the practice of the Board of Trade to screen to so big an angle as 5°. I think that was your opinion then?—I think it was my opinion, and I have no doubt that at Washington when they talked about half a point they talked roughly, they did not mean that it should be absolutely so many degrees. This reminds me that I must correct a slight mistake in my previous evidence as to the average angle of screening prior to 1892. I find that in consequence of a misapprehension upon my own part, the new regulation having been formulated by Mr. Samson and myself entirely independent of the old ones, it escaped my observation that the length of the screen is measured from a different place now to what it was in the past.

As soon as I saw Mr. Laslett's evidence with regard to this point,* I wrote to Mr. Ramsay, and he sent me two sets of measurements, one supposing the length of the screen to be 36 inches, and the other to be 42 inches, and the reason that he sent the longer measurement was that he had noticed that the length of the screen would be greater. He did not call my attention to it; if he had done so I should have seen it at once, but he merely stated that there were two sets of lengths. I have recalculated all the table which he has put in, and I find it reduces the angle of 4° 32′ to about 4° 2′. I do not know that it is material, but I think it right to mention it.

4921. (*Sir E. Harland.*) May those two lengths not represent identically the same length? May one length not be 3 feet in front of the lens, and the other, say, 3 feet from the centre of the wick, or something of that kind?—No, I regret to say it is not; and I take the whole blame upon myself. I ought to have noticed the two sets of measurements are entirely different. The measurement from the centre of the wick I marked down in pencil on the end of the sectional drawings you have on the table, and at present the measurement is 36 inches from the wick. The old measurement was on an average 40½ inches when measured from the same place as we now measure from.

4922. Then might not that arise from some instruction to some surveyors that the screens shall be 3 feet in length, and that the surveyor has, therefore, perhaps very naturally measured from the lens to the end of the screen, which would be the 3 feet?—No; I think that they perfectly understand how the measurement is to be taken at the present moment, and you can quite understand the difficulty of measuring from the fore part of the lanthorn, because unless you get a sectional drawing you do not know the length of the screen from the wick, and it is only by getting a careful sectional drawing of every single lamp that you can measure it.

4923. (*Mr. Bolam.*) The instructions are specific previous to 1892, "three feet forward from the front "of the lantern;" and that is intensified by the table produced, which gives the length from the centre of the lantern as never less than 3½ feet and coming up to 4½ feet. If we take the two extremes, therefore, that will cut the average of 4° 26′ in the table down from 4° to 3°—4° with the shortest length, and 3° with the longest?—That was merely for reference purposes. I had better explain why this table was drawn up. I had one case of a surveyor in Dundee who stood upon the quay a very short distance ahead of the ship, and because he could not see both lights that short distance ahead he had the screening altered till he could plainly see both lights. I spoke to Mr. Gray, who was then the Assistant Secretary, about it, and I gave instructions to Mr. Samson to draw up this table, so that the surveyors would be able to tell what the screening should be according to the different lengths of screens. That was done, therefore, merely for their information.

4924. (*Chairman.*) Then I think you desire to say something with regard to what was said by the witness I have referred to as to the "Lusitania"† ?—Well, I have nothing to say myself about it. Of course I know nothing about it, but Captain Wilson reported to me that one of his surveyors had informed him that no alteration had been made in the screening of the "Lusitania's" side lights, as they were found to be screened to an angle of 4°. I informed Mr. Anderson of this, and he denied it, and I consequently referred the matter back to Captain Wilson, and his enquiry tended to show that his previous statement was correct. The surveyor was Mr. Rowe, and, perhaps, the Committee may wish to hear what he has to say, as it would be only fair to him. I may say that he is a very careful surveyor, and I should be inclined to think that his report was correct.

4925. In the answer to Question 1092 there is a statement as to the decision of the Washington Conference and the way it affected the action of the Board of Trade; that the Board of Trade felt bound to move in accordance with this decision. Do you agree with that view?—No, I say it was only with reference to the alteration of the screening from the centre of the wick to the outer edge of the flame. There is a letter from the gentleman who was Assistant Secretary at that time.

* Question 1121. † Question 1172.

4926. This is a letter written by Mr. Swanston:— "Junior Athenæum Club, 116, Piccadilly, W., 13th "May, 1895. Dear Murray,—With reference to the "screening of side lights, when the Board received the "Washington Resolutions Sir G. Nares undertook to "deal with those affecting his own Department, and "I requested you to consider those affecting the "Marine Department. But you were not in any way "tied down by the Washington Resolutions as to either "the vertical divergence of the lights, or as to the "angle to which the lights were to be screened. Of "course, the Board of Trade could not supervise the "construction of all the lamps used in the Mercantile "Marine without further power and increased staff. "It was pointed out to the deputation that this would "be equally true of Lloyd's, and you inform me that "Mr. Martell called upon you with reference to this "proposal and practically agreed in your view. Very "truly yours—GEORGE J. SWANSTON" ?—Mr. Anderson proposed that Lloyd's should undertake it.

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4927. Then question 1098 says, "What took "place at this Conference? — Sir Digby Murray "again told us that he felt compelled to go as high "as 4° because of the Washington Conference and "of his own experiments, and because it was about "the average of the practice in the past; but he then "admitted what we had all along contended for, that "4° might be too much in narrow waters, and said he "would not be opposed to having two different screen-"ings, one for narrow waters, and one for the open "sea, but that suggestion did not seem to any of the "deputation a practical one." What do you desire to say about that?—I was not in any way bound by the Washington resolution. I did not admit that 4° might be too much in narrow waters, but I did say that the regulations were regulations for preventing collisions at sea, and did not apply to rivers and other inland waters. Page 5 of Departmental Paper, No. 179*, indicates the position I have always taken up on this subject.

4928. Then in the answer to question 1099, it is said, "We pressed upon the Board of Trade the need there "was that the lamps themselves should be of correct "and uniform construction in every detail, without "which uniformity of screening was unavailing. We "told the Board that the lamps at present in use were "extremely irregular, many of them being thoroughly "bad in every way. Mr. Corry will speak as to the "construction of lamps, so I will not anticipate him. "The Board said it was impossible for them to under-"take the surveillance of the lamps themselves, they "had not sufficient staff for the purpose. I suggested "that they should invite Lloyd's Registry to undertake "it, as in the matter of testing chain cables and fixing "load lines." What do you say to that?—Neither my colleagues nor I said it was impossible for the Board to undertake the surveillance of the lamps themselves, because they had not sufficient staff for the purpose. What Mr. Swanston and I said was that it was not practicable without further statutory power, and without this the staff was insufficient for the purpose; and that this was equally true of Lloyd's. Mr. Martell, who subsequently called upon me on the subject, concurred. In fact, Lloyd's would require to increase their staff much more than we should.

4929. Then question 1105, "What is the result at "which you arrived on this point?—Well, from what "I have said, it appears that the Board of Trade ex-"periments and inquiries into this subject which led "to the new order, were undertaken in consequence of "the Washington Conference, and that, but for the "Conference recommending the excessive convergence "which it did, the new order would not have gone so "far as to require a degree of convergence now ad-"mitted by the Board to be a possible source of danger "in narrow waters"?—I am unable to concur in any way in that statement.

4930. Then I think there is something you desire to say, is there not, with regard to the evidence of Mr. John Corry as to lights on board of his ships?—Well, I know generally what Mr. Corry has to say. I have not seen any of the diagrams that he put in before the Committee, but what I wish to say is this; that I have not seen any of the lights on board of his ships to which he alludes, nor have they been reported on to me, and I have not ventured to ask our surveyors to visit one of his ships, for fear of conveying to Mr. Corry the

* *See* Appendix 2, No. 7.

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impression that I mistrusted his statements, which would be entirely the reverse of the truth; but lamps constructed after the pattern of Mr. John Corry's must have been very rare prior to 1892, and if screened as he suggests would only form an angle of 1° 6′ 45″ from the outer edge of the wick supposing the wicks to be parallel to the chord of the arc and the latter to form an angle of 45°. I should like again to call the attention of the Committee to the measurements made by myself in London and Leith, and to those made by Mr. Ramsay in the Tyne district, which shew that the mean angle of screening of all the lamps measured would be a little over 4°.

4931. Questions 2143 and 2144 are: "Now, in the "daytime meeting ships may have an angle of 4° "with the fore and aft line of your ship and be nearly "ahead of you? Yes. What angle would you call "nearly ahead of you? I should certainly not call "4°; 4° certainly does not come on the boundary; 2° "might; it would depend upon how far you are off." I think you desire to make an observation with regard to that?—Well, I should like to quote in the first place something that was written by me long ago before the Washington Conference. "Article 15. If two ships under steam are meeting end on, so as to involve risk of collision, each "shall alter her course to starboard, so that each may "pass on the port side of the other. This article only "applies to cases where ships are meeting end on, or "nearly end on, in such a manner as to involve risk "of collision, and does not apply to two ships which "must if both keep on their respective courses pass "clear of each other. The only cases to which it does "apply are when each of the two ships is end on to the "other, in other words, to cases in which, by day each "ship sees the masts of the other in a line or "nearly in a line with her own, and by night to "cases in which each ship is in such a position as to "see both the side lights of the other. It does not "apply by day to cases in which a ship sees another "ahead crossing her own course, or by night to cases "where the red light of one ship is opposed to the "red light of the other, or where the green light of "one ship is opposed to the green light of the other, "or where a red light without a green light, or a "green light without a red light, is seen ahead, or "where both green and red lights are seen anywhere "but ahead." Then this is my own remark: "It is "clear, if two steamships are meeting end on, or "nearly end on, the readiest way for them to avoid "one another is either for both to starboard or for both "to port, and no objection, I think, can be taken to "the rule that both are to port. The only criticism "I have to make is on the explanatory paragraphs. I "think these have the fault of aiming at too exact "definition. The first paragraph is, in my opinion, "amply sufficient, and the two last should be struck "out." I am still of the opinion I expressed then; and now let me put two questions. A is a steamship steering due W.; B is a steamship 2° on A's starboard bow, and steering E. 2° S., *i.e.*, directly for A. Are these two ships meeting end on or nearly end on? Again: A is a steamship steering due W.; B is a steamship 4° on A's starboard bow, and steering E. 4° S. Are these two ships meeting end on or nearly end on? In my opinion, in both cases the answer should be in the affirmative, and both ships should port. Perhaps you will permit me to put in a diagram* which entirely illustrates that.

4932. You have said that either rule, that both vessels are to port or that both are to starboard, would equally ensure safety?—Yes, if when both lights are seen both were to port, or both were to starboard—except that the regulations say both shall port. I know that that has been very carefullly considered by different rule of the road committees for a very long time past, and before I had anything to do with it.

4933. I do not quite follow that point for a moment, because where the rule is both shall port, or both shall starboard—we will assume it ought to be both shall port—if you say both shall port when both lights are seen and that they shall not port unless both are seen, that would lead to safety, would it not, if we suppose that the two ships are screened in the same way?—Yes, I say the screening ought to be uniform, they ought to be screened exactly in the same way, or as near as practicable.

4934. Then, supposing these two vessels were screened the same, and at 2° of bearing each saw only the green of the other, it would be perfectly safe in that case that they should starboard?—No, in that case one would port and the other would probably starboard.

4935. Why?—Because one would see both side lights, and the other only the green; if both saw the two side lights of each other, they would both port.

4936. That depends, does it not, upon whether you say that 2° constitutes end on or nearly end on?—No doubt if you were to say that 4° was not end on, or nearly end on, then ships in these positions would be left without any regulations whatever.

4937. Of course they would be left to the general regulations that ships must do whatever is seamanlike to ensure their safety?—I do not think that is enough for the masters and commanders of the smaller class of ships, especially; regulations are not meant for the most intelligent masters afloat, but they are meant for the less intelligent, and unless you have a precise rule to guide them, I am afraid you will find a good deal of danger will arise.

4938. I do not think we need discuss it more now, but I want to get clearly your view on this point: Supposing a man saw lights on his starboard bow, and after watching them saw them steadily come on, not broadening at all, under those circumstances it would clearly be his duty to starboard (*describing*)?—It is very easy to say that, and we are repeatedly told that you have only to watch the bearing of a ship to know whether she is going to collide with you or not, and in the olden days—if you were to go back 30 years—it may have been possible to a certain extent, but in the present days, especially in the Channel, a master of a ship would have no opportunity to so carefully watch all these bearings—he has not time, he cannot do it. He has to act on the spur of the moment, and it is not only sighting one ship, but sighting several in the Channel, and when he sights several ships at once, how is he carefully to keep watch of the bearings of those ships? It is utterly impracticable.

4939. (*Rear-Admiral Andoe.*) You do not suggest at all that it should be optional for him to starboard or port? I understand you to say that when one ship sights both the lights of another ship, she should undoubtedly port, whatever the screening may be?—No, I do not go as far as that, because one ship might see the two side lights of another when she was abeam of her.

4940. I am speaking now within the limit of ahead or nearly ahead, that is what we are discussing. But you do not suggest for a moment that she would take any other action but port as long as she sees both lights ahead or nearly ahead?—Yes, that is what I say under the present regulations; if you are going to alter the regulations of course that is another matter.

4941. (*Chairman.*) Now, question 2036: "You know it "is said that there is a misprint in the paragraph of "the Board of Trade Instructions of 1875 which "directs screening from the inside of the inner edge of "the wick, a misprint of *wick* for *lens*; but as the "lamps were made, do you think there was any "material difference between the screenings from the "inner edge of the lens and the inner edge of the "wick?—I have been informed, I forget by whom, that "Sir Digby Murray said there was a misprint there, "but in all the diagrams and the instructions to "surveyors the two lines are practically identical (*i.e.*, "the line joining the inner edge of the wick and the "outer edge of the chock cuts the inner edge of "the lens) as far as the scale of the diagram will "admit. I believe that in some lamps, constructed "by careless or ignorant makers, the two lines would "not be at all identical, but in the best lamps they "are." Well, I have never seen such a lamp; there may be such a lamp, but in all my experience I have never come across one in which the inner edge of the wick and the inner edge of the lens were in the same line. I will put in the diagrams referred to. I would not allow the draughtsman even to copy it; the drawings taken from the old instructions; and the only thing different about it is that these red lines have been put in to show the angle from the centre of the wick. This is the original diagram (*produced*). It has been lithographed as correctly nearly as they could manage it, and that is a woodcut taken out of the old instructions and pasted on the paper.

* *See* Appendix 13, No. 8.

4942. These are the diagrams from the old instructions, with some red lines added, are they?—The red lines are the only alteration; they are only drawn so as to show the angle from the centre of the wick to the outer edge of the screen or chock, as the case may be.

4943. So that your point, I think, is that these do not show the inner edge of the lens in the same line as the inner edge of the wick?—But more than that, because you will will see that it says, "but in all the diagrams "and the instructions to surveyors the two lines are "practically identical, as far as the scale of the "diagram of measuring them will admit of." I have simply put in those lines to show it is very easy to measure, and therefore that statement is not quite accurate.

4944. As we are on this subject, there is a matter to which I should like to call your attention. Rear-Admiral Andoe has been kind enough to call my attention to one plate in the later instructions of 1894, figure 4, which may explain what the witness meant; where it would seem, as far as the drawing is concerned, that the inner edge of the wick does pretty nearly coincide with the inner edge of the lens.

4945. (*Sir E. Harland.*) It is very near in this diagram of one of Harvie's lamps?—That is an unusual size of lamp, but it was the only one of Harvie's I had, and I had the drawings made of it.

4946. (*Chairman.*) It is Plate III, figure 4.* Certainly it looks as if a line drawn from the inner edge of the wick comes to something very near——?—It does in this drawing. but these drawings were not intended to show anything of the kind—only to show how the lights were to be screened—that is to say, the angle; these particular drawings are not to scale at all.

4947. But it is very likely, is it not, that what the witness had in his mind were such diagrams roughly drawn?—Well, I cannot say about that. I will look at it again. You must remember that those drawings were not applicable to what took place prior to 1892. What we have been discussing and what the witness was alluding to is what took place prior to the year 1892.

4948. Upon that there is a question I should like to ask you. In the International Regulations, Article 3, sub-section *c*, are these words: "On the port side, a "red light, so constructed as to show an uniform and "unbroken light over an arc of the horizon of 10 "points of the compass." Does not that imply that the construction of the lamp itself should be such as to show "an uniform and unbroken light." You will observe it is contrasted with the fixing of the lamp afterwards, as it goes on, "so fixed as to throw the "light from right ahead to two points abaft the beam "on the port side." Does not that imply that the lamp should be so constructed as to show "an unbroken "light over an arc of the horizon of 10 points of the "compass"?—I think, undoubtedly, it may be argued so, but I know it has never been construed to mean that.

4949. Then would you follow me as far as this; if that be, as it seems to me, the undoubted meaning of these words as they stand that cannot be effected except by having the limitation of the light effected by the edge of the lens?—I do not think that could be done without a screen or a screen and a chock, because it says an uniform and unbroken light, and if the lamp itself acted as a screen, you would only see the light over 10 points of the compass, but the light would not be an uniform and unbroken light over 10 points of the compass.

4950. Why not? Supposing you had a lamp so constructed that a line drawn from the edge of the lens to the inner edge of the wick, and a line drawn from the edge of the wick to the other edge of the lens gave you an arc of 10 points, would that not be a lamp so constructed so as to show "an uniform and unbroken "light over an arc of the horizon of 10 points of the "compass"?—No, it would be impossible; because the commencement of the first point would only be an edge of light.

4951. I do not quite follow that?—The article speaks of an uniform and unbroken light.

4952. Supposing the forward edge of the lens cut a line drawn through the forward edge of the wick from the centre of the lamp and the after edge of the lens cut a line drawn through the after edge of the wick from the centre of the lamp, could you not then have a lamp so constructed as to show "an uniform "and unbroken light over an arc of the horizon of "10 points of the compass"?—Yes, but not from ahead of the ship.

4953. That is another question altogether. But would that not be a lamp so constructed as to show "an uni-"form and unbroken light over an arc of the horizon "of 10 points of the compass"?—That is more than 10 points.

4954–8. Assuming that the two lines drawn through the two edges of the wick and cutting the two edges of the lens form an angle of 10 points, would not the lamp then be a lamp so constructed as to show "an "uniform and unbroken light over an arc of the "horizon of 10 points of the compass"?—I should like to draw this first to scale before answering the question, because the diagram here is very considerably over 10 points, and it would make a difference, I think, if you came to draw it accurately to scale.

4959. Cannot you imagine that to be 10 points?—Yes, of course I can imagine it, but then the result would not be quite the same.

4960. I will tell you quite fairly that the next question I should venture to ask you would be: Supposing you say that what I put to you would not do, then I should like to ask you, how could you then construct a lamp so as to "snow an uniform and unbroken "light over an arc of the horizon of 10 points of the "compass." If the plan I have suggested will not do what would do?—I think you can get it by the screening here.

4961. No, I want the lamp, please, apart from the screening. Do you say it cannot be done?—I say that in my opinion it cannot be done.

4962. Then in your opinion it would be impossible to comply with this rule?—The construction you are asking me to put upon it is, I think, not right.

4963. I merely want to get your view about it, because the rule says, "On the port side, a red light, "so constructed as to show an uniform and unbroken "light over an arc of the horizon of 10 points of the compass." Can any interpretation be put upon that other than that which I have ventured to put upon it; namely, that the construction of the lamp should be such that it should "show an uniform and unbroken "light over an arc of the horizon of 10 points of the "compass"?—I should be inclined to say that in order to arrive at that, you would be obliged to have the lens extending over an arc of more than 10 points. That is to say, to show an *uniform* light; it will show *a* light.

4964. A *uniform* light is what we have got to deal with. Then you think a lamp could be made to fulfil the conditions of this order which says that it is to be constructed so as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass?—Yes, but then you must remember that if you were to do it in that way, it would cut a portion of the light off the outer edge.

4965. That is another thing altogether. That is not what I am asking you, but the fact remains, does it not, that a lamp so constructed, must be constructed so as to have the inner edge of the lens in a line with the inner edge of the wick?—I do not agree.

4966. If that would not do it, what would?—If you will let the secretary take down your question in black and white, I will give you an answer and a diagram to-morrow.*

4967. Very well, I will do that. I think you wish next to say something about the answer to Question 2038, which deals with distance at which lights can be seen in the Mediterranean and Red Sea?—It is very difficult for a man who is navigating a vessel at sea to tell the exact distance at which he sees the lights, and I think the statement of the distance at which the lights show in the Mediterranean and the Red Sea requires confirmation. Especially do we require to know what is the candle power of the lamp; we are not told that. Another point is that there is no time when the lights are so great an advantage to a navigator

* Appendix 2, No. 1.

* I understand the Chairman's question to be whether a side light can be so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass only. If I am to answer this unconditionally of the question in the following paper as to what is meant by the words "ahead and abaft the beam," my reply is that it is not possible to properly construct a lamp to show in the manner indicated. To have a properly constructed lamp the centre of the wick must be the centre of curvature of the lens, and as the flame is not a mere point, but has considerable breadth, it would be impossible to limit the arc of the horizon to 10 points of the compass only.

*Sir D. Murray.*

17 July 1895.

as when the weather is thick, and when the weather becomes thick on board these vessels burning electric lights I am informed that the candle power has to be reduced in order to diminish the reflection, which would otherwise be prejudicial to the navigation of the ship. The result of this is that the penetrating power of the light is diminished at the time when it is most wanted. It is also to be remembered that the regulations are regulations for preventing collisions, and do not apply to distances at which there is no danger of collision.

4968. In answer to Questions 2052, 2053, 2054, 2055, the witness gave instances of his experience with regard to steamers meeting one another—it is not necessary to read them at length. What do you say to that?—I think, if it can be shown to what angle the lights were screened in all these vessels, there might be something in it, but the angle to which they were screened is purely an assumption, and under these circumstances I really cannot see what is the value of these instances.

4969. Now, Question 2065; the question and the answer are: I think it was pointed out to you, was it "not, by the officials of the Board of Trade, that some "statistics showed that 4° of convergence was about "the average of previous practice. What would you "say to that suggestion?—Well, I got these statistics, "and dissected them for myself, and I found, whether "by accident or design, that nearly all mail steamers "and vessels of the best class, which would have "powerful side lights, were left out of them. "They were nearly all either cargo steamers or sailing "vessels. In the Liverpool list there were four "Cunard steamers; they were the only ones that I "could see that were mail steamers at all. In the "London list there were a few more, but five of "those in the London list had their lights screened "parallel, and the others were from 1° to 3½°. The "whole of our fleet and the Pacific Company's fleet, "where the chocks had been pared away (I have "this on the authority of our Marine Superintendent "and Captain Conlan, Marine Superintendent of the "Pacific Company), there was nothing said about "them. There was nothing said about the P. and O. "ships, with a few exceptions in which the angle "was less than 4°, which were altered previous to "that measurement. I felt that they were altered "the wrong way according to my argument. They "were not altered to decrease the angle, they "were altered to increase it." And Question 2066, "In your opinion, were there whole fleets of steamers "of which yours was an example where the angle of "convergence was only about a degree?—Yes, I "did not measure them all: I know they were all "done on the same principle, and my own was a "degree, or a degree and a sixth exactly. I calculated "it to be accurate from the shadow thrown by the side "lights on the screen, the shadow of the chocks "on the screen; then when I actually measured the "crossing points with the lead line in port afterwards, "they agreed within 7 or 8 feet." I think you have looked at the list of vessels, have you not?—I have. I find that there are 37 vessels included in it, belonging to well-known companies, most of them having their lights screened to a very fine angle, or else to no angle; they are as follows:—

| Name of Companies. | No. of Ships. |
|---|---|
| Cunard Steam Ship Company | 5 |
| Peninsular and Oriental Steam Navigation Company. | 3 |
| Royal Mail Steam Packet Company | 3 |
| Donald Currie and Company | 3 |
| Union Steam Ship Company | 3 |
| J. and A. Allan | 1 |
| Dominion Steam Ship Company | 3 |
| Anchor Line | 1 |
| City Line | 1 |
| F. Leyland and Company | 3 |
| T. and J. Brocklebank | 1 |
| West India and Pacific | 1 |
| W. Johnstone and Company | 3 |
| Oceanic Steam Navigation Company | 2 |
| Telegraph Maintenance Company | 1 |
| British and North Atlantic Steam Ship Company | 2 |
| National Steam Ship Company | 1 |
| Total | 37 |

These large steamships form a minority of the mercantile marine fleet, and the wonder to my mind is not that so few of this class of vessels are recorded amongst the comparatively small number of vessels in the table, but that so many are recorded. These tables were not intended to show the average angle of screening, a far larger list would have been necessary for this purpose, but merely to indicate the lack of uniformity which, in the opinion of the Department, required a remedy. I have no doubt in my own mind that there are some ships of which we have obtained particulars which we have never printed. At one time we thought that all this agitation had died out, and the Department always has to avoid any unnecessary expense, and in consequence many of the lists were put on one side and not printed. All I want to show the Committee is that everything has been done perfectly fair and above board; the lists which have been printed are exactly as they came in; the reason why the later ones are not printed is because they came in after the others were printed; but I have one report here showing the manner in which the lights were screened at Greenock.

4970–3. Then question 2108: "And it was a very "extraordinary thing that when those statistics were "prepared by Sir Digby Murray there were hardly "any mail steamers in them. I think in the Liver"pool list there were four Cunarders and one was "1° another 1½°, another 2° or 3°, and another 2°, as "well as I remember?"—Well all I can say is that statistics of this character were never prepared by Sir Digby Murray; the particulars furnished by the Liverpool and London surveyors were printed in exactly the same condition as when received by the Department; they were not weeded out or picked in any way.

4974. Question 2239: "Is there any advantage at sea "at all, in point of fact, with a large angle of "screening?—None whatever. The man that carries "out the rules of the road so like an automaton as to "to rub sides with the fine screening will do the same "with the 4° angle, which has all the navigational dis"advantages I have enumerated. I have never heard "but one argument in its favour, and that was Sir "Digby Murray's own opinion: and he told us when "we went to see him in deputation that if two vessels "were approaching one another in foggy or hazy "weather, and that if they could not see both side"lights, there would be a risk of collision. Well, I say "if they got as close as that the side-lights will not "avoid collision. There is nothing but full speed "astern?"—Well, he does not say what the distance was. I remember perfectly well what I said at the time.—I said "at distances ranging from a quarter "to half a mile," That was about the distance probably in thick weather that they would be visible if they were visible at all.

4975. I think there was a paper* which you have been kind enough to prepare as to the general conclusion with regard to the screening of ship's lights; perhaps the best plan will be, unless you desire to add anything to it, to put that paper in as it stands?—Yes; I have a letter I should like to add to it. There is another paper with reference to the experiments. Then if you wish to have the paper put in as it stands, I should like to add a letter and a tabulated statement to it.

4976. Is there anything else you wish to say with regard to the paper of general conclusions?—I do not know that there is anything; I think it speaks for itself. The only thing I do feel very strongly upon is in the letter-press at the bottom. "It is necessary to "consider what is nearly right ahead before the "angle of screening is determined."

4977. Then there is the question of experiments. You know we have made certain experiments, and we should be very glad to hear whether you think there are any other experiments or any other conditions of experiments which ought to be tried?—I think that the experiments are not complete unless they are made under different atmospheric conditions. You have only to compare the experiments of 1893 with those made in 1895, which were carried out in the most careful manner, to see that a very great difference is caused by different states of the atmosphere. You will see that in the 1893 experiments the light from the outer edge of the flame and also the diffused light from the

* Appendix 13, No. 2.

lens was invisible at both the distances of 500 and 1,000 yards, so that all that was seen on that occasion, although there was only a low-lying haze, was the portion of the flame corresponding to the angle from the outer edge of the wick.

4978. There is another matter which I think you can clear up. We have heard a great deal about the "dark lane," a phrase which rightly or wrongly has been attributed to you. I think you intended by that to convey only what would arise if a light were screened to no degrees from the outer edge of the wick?—Yes, I think I would prefer to put it in the manner that many of our opponents have put it, and say that if the light was so screened that it did not cross the line of the keel projected ahead of the vessel, under those circumstances you must have a dark lane.

4979. But supposing it was screened to the inner edge of the wick, you do not under those circumstance suggest that there ever is a dark lane?—No, I do not, if you screen it from the inner edge of the wick; you will, however, have to be a considerable distance from the light, especially in thick or foggy weather before you will see the whole of the light, before you will see a uniform light.

4980. But you will see the light at such a distance as will render any such phrase as a "dark lane" inapplicable?—Yes.

4981. (*Mr. Ismay.*) Have you any objection to screening from the inner edge of the wick?—Yes, I have a very strong objection. In the first place, the screening, I think, ought to indicate the width of the field, and ought to be fixed in all cases. If you were to screen from the inner edge of the wick you would have to make the position of the wick in the lantern statutory; and then if you do that it does not matter whether you screen from the inner edge, or the centre, or the outer edge.

4982. But supposing you were screening parallel with the keel you might do away with the angle altogether?—I think the screening from the inner edge of the wick would be altogether too fine. As I pointed out, any surveyor may make a mistake of half a degree in screening a side light. You see, in the first place, our Board of Trade staff is limited, the surveyor has to perform his work at any time; raining or snowing or blowing, he has to carry it out. When the screens are on the top of an upper or flying bridge it is most difficult, especially in bad weather, to screen lamps to a nicety. There is generally only one surveyor at work, and he may not, and he does not, get in many cases sufficient assistance. He cannot be at both ends of the batten at the same time; and as I have pointed out in the paper I have put in, a mistake of only three-tenths of an inch will make an alteration of half a degree one way or the other, and of course, the finer you make the angle of screening the greater the error is in proportion. Half a degree is only one-eighth of 4°, while it is one-half of 1°, and if you screen from the inner edge of the wick that is in round numbers what the screening will be reduced to. I may point out that the Rule of the Road Committee, after the first night's experiments, gave up all idea of having a 1° angle, they would not test anything less than 2°.

4983. And you think in the experiments recently made the weather was rather too favourable, and rather too uniform?—I sincerely wished before you went down there that you might have one rainy day, so that you might see what an extreme difference a change in the atmospheric conditions would make.

4984. (*Rear-Admiral Andoe.*) When the last Committee—the Rule of the Road Committee—reported regarding the screening of side lights, they said, in the last paragraph: "At the same time we desire to "point out that no strict uniformity of the angle at "which the full strength of the lights is in practice "visible is possible so long as a great variety of "patterns of lamps are in use, and, in view of this "fact, as well as of the great improvements which have "been and are being made in the construction of "lamps and in the power of illuminants, and of the "great increase in the size and speed of ships, we "think that the Board of Trade should in certain cases, "upon the request of the shipowner, have power to "allow the angle of screening to be reduced to 3°, or "in special cases to even less than that angle." Can you properly say what reason the Board of Trade had for not carrying out that suggestion?—Because no application has been made. A report was printed, but the shipowners made no application. There is a paper, which I thought I had brought here with me, in which I at the time took down what took place at the Committee. I referred it to Mr. Hipwood, who was the secretary of the Committee, to ask whether it was correct.

4985. Was it intimated to the shipowners that this point would be given consideration?—No; but then the report was circulated publicly.

4986. What report, *this?*—Yes, the report of the Rule of the Road Committee, and the P. and O. had their marine superintendent on the Committee. It was well-known in the City.

4987. But it was never specially intimated to shipowners in any way?—No.

4988. (*Mr. Bolam.*) And no instructions were sent to surveyors to concede the angle?—No, because it was never intended that the surveyors should concede it. What took place was that it was agreed that if the shipowners wanted to screen their lights to a smaller angle than 4°, they should send those lights to be experimented upon, and if they were found in consequence of their great brilliancy to show to a greater angle than 4°, then the angle should be reduced until they showed to 4°; and a very difficult thing I should say it would be to do it, because the difference in the atmospheric conditions is so very very great that it is very difficult to arrive at any conclusion. I should like to say something with reference to the suggestion that there is any difficulty in regard to the broad screening. I should also like to refer to the regulations of the Thames Conservancy. I was asked by Lord Farrer, who was chairman of the Thames Traffic Committee, to draft these regulations for the consideration of that committee, and, so far as I can remember, they were adopted without change, and subsequently embodied in the byelaws of the Thames Conservators.

4989. (*Captain Wilson Barker.*) I notice Sir Digby Murray says in his General Conclusions on Screening Lights, that Mr. Samson and he thought at one time that the red light should be screened rather differently to the green?—That is so.

4990. And I see all these experiments show that the red light showed very much more over the bow, in fact, nearly twice as much as the green light?—So far as the mere question of lights is concerned, apart from the steering and sailing rules, we were of opinion that the red light might be very well screened at 3°, providing the green light was screened to 4°. Since that, however, I have seen many green lights which show quite as far as the red, but there are undoubtedly a good many green lights at the present moment which would not show for anything like the angle. The only reason we did not recommend it was that there was such a striking want of uniformity in what had taken place in the past, that we were afraid to have any difference.

4991. (*Mr. Bolam.*) Upon that may I ask whether you knew the candle-power of the lamps used in the experiments at Glengall?—No, I do not, but evidently, from the experiments, the green light must have been a very bad light. I was rather in error, perhaps, in stating it was a plano-convex lamp. I ought to have said it was a plano-convex light with a coloured lens but no slide. There is a photograph which perhaps I may be permitted to put in; it was asked for before, but I did not wish to put it in without explanation. Those flames all proceed from wicks of the same size, that is to say, 1-inch.

4992. (*Chairman.*) What was the difference of conditions?—The principal difference of conditions was the way in which they were trimmed—in this lamp the edges of the wick were cut off, and the wick was rounded. That is the reason why there is so small a flame, but a difference in the compression of the wick itself makes a most wonderful difference. I was so surprised at what took place during the experiments, that I had the lamps sent up as they were to our office in Bedford Street, and then I wrote to Captain Abney about it, and told him I was very anxious to have some accurate photographs, and he was good enough to have these photographs taken. You see they are signed by him.

## Thursday, 18th July 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

| | |
|---|---|
| Rear-Admiral ANDOE. | Sir EDWARD HARLAND. |
| Mr. BOLAM. | Mr. ISMAY. |
| Captain HALLETT. | Mr. SCRUTTON. |

Mr. C. HIPWOOD, *Secretary*.

Sir D. Murray. 18 July 1895.

Sir DIGBY MURRAY re-called and further examined.

4992*a*. (*Chairman.*) I think you wish to say something about the report of the Rule of the Road Committee not having been communicated to shipowners?—Yes. I told the Assistant Secretary what took place yesterday, and this is the statement he wishes me to hand in, "The report of the Rule of the Road Committee, "dated December the 8th, 1893. This report was "presented to Parliament and printed in the Parliamentary Paper C. 6869, but the attention of shipowners and others affected was not specially directed "to it. It is not usual to call attention to such "reports, and, in fact, it would be superfluous to do so. "They become public property by publication, and the "press, the societies, and the associations connected "with the various shipping interests ensure such reports being generally known and carefully criticised. "No application has been received from any shipowner "for a reduction below 4° of the angle of screening."

4993. (*Chairman.*) You were kind enough to refer to the Thames Rules in support of your view?—I am not aware I so much quoted them in support of my view except that I think the narrower the channel the safer a broad angle of screening is; for instance, if you take a mere ditch or a channel like the Clyde, surely a pilot knows whether he is on the side of that channel which lies on his own starboard side. In fact, so far as the ships proceeding up and down a narrow channel are concerned, I do not think it matters whether there are any side-lights at all.

4994. If you take the view that they ought to be guided by the local regulations, and not to be guided by lights, it does not matter whether there are side-lights at all?—No, but it is necessary in a river like the Thames that there should be side-lights, because there are a number of barges and small craft crossing backwards and forwards, and it is absolutely necessary that they should have side-lights screened in such a way as to afford the necessary information to ships passing up and down the channel or fairway.

4995. Then the instructions would be the same as instructions in open waters?—I do not see the slightest difficulty. I have read very carefully the evidence on the subject, and I do not see that there is any force in the contention that the 4° angle of screening is especially unsafe in narrow waters. There is not any danger, and I know a great number of people are of opinion that there is not the slightest danger; but what I want to draw attention to is the Thames Rules. Rule 22 is very much like Article 21 of the International Regulations. It says, "When two steam "vessels proceeding in opposite directions, the one "up and the other down the river, are approaching "one another, so as to involve risk of collision, they "shall pass one another port side to port side." Then this, I think, is the most important rule we have:—"Steam vessels navigating against the tide shall, "before rounding the following points, viz., Coalhouse "Point, Tilburyness, Broadness, Stoneness, Crayford-"ness, Cold Harbour Point, Jenningtree Point, Half-"way House Point or Crossness, Margaretness or "Tripcock Point, Bull Point or Gallionsness, Hook-"ness, and Blackwall Point, ease their engines, and "wait until any other vessels rounding the point with "the tide have passed clear." And I think that rule has done more to avoid collisions than any other. Then there is the further one:—"Steam vessels "crossing from one side of the river towards the other "side shall keep out of the way of vessels navigating "up and down the river."

4996. Those rules are all quite independent of any sidelights at all?—Quite. The regulations for sidelights are exactly the same as in the regulations for preventing collisions at sea. We found the rule for vessels rounding points work so well that we extended it to the upper river, and we are now going to modify it again so as to make it a little wider: "Steam vessels and "steam launches navigating against the stream above "Richmond lock shall ease and if necessary stop to "allow vessels coming down with the stream to pass "clear, particularly when rounding points or sharp "bends in the river." These rules were thoroughly considered by the Thames Traffic Committee, after I had drafted them at Lord Farrer's request. I have here the report of the Thames Traffic Committee, containing the rules as they recommended them.

4997. The rules seem to me to follow the report exactly?—Very much so. I do not know whether you wish me to leave this photograph. It is merely for the information of the Committee. I am not basing anything on it with the exception that I think it show that the trimming of the side-lights makes a considerable difference, and even the compression of the wick has a great deal to do with the width of the flame.

4998. (*Sir Edward Harland.*) What do you mean by compression?—Whether the wick is loosely wove or tightly wove.

4999. (*Chairman.*) If you will kindly leave these?—Certainly, with pleasure. I may say that these slides placed on the table were sent by the Admiralty to the Board of Trade on our application.

5000. (*Chairman.*) That is everything, I think, that you desire to say at the present moment?—There is only one thing more, which I did not say yesterday. I think I called your attention once before to the pamphlet on the regulations for preventing collisions at sea by Mr. Thomas Gray. I think some of the Committee have considered since that these are Board of Trade Rules, but they are not, except in so far as they have received the official approval of the Board of Trade, the Admiralty, the Trinity House, the French Government, and other nations, and that this approval has never been officially withdrawn. I have only read a part of what is on page 7, and I should like to draw your attention to these words: "6. Every one is "unanimous in agreeing that no two ships can come "into collision so long as they show each other the "same coloured light, green to green, or red to red. "7. The rule cannot therefore apply:—*a*. when a green "light is seen anywhere on the starboard side: *b*. "When a red light is seen anywhere on the port side: "*c*. Nor can it apply when a red or a green light is "seen ahead. 8. There is not the remotest chance of "collision in either of the cases above put. It would, "therefore, be idle to make rules to define what the "ships so situated are to do to prevent collision: and "yet the government have been asked to make such "rules." If the public wanted it at a time when there was no danger of collisions in this respect, because the lights were then so broadly screened, it would seem to me that if the angle is to be decreased there would be very considerable reason for providing them with such rules.

5001. It is the case, is it not, with vessels of great beam, something like 70 feet or so, even with a 4° angle of screening, that there would not be absolute perfect safety?—No; everything is comparative, and you could not make it absolutely safe at wide angles of

screening, but the more you decrease the angle the less safe you make it.

5002. May I ask this one question, *apropos* of something you said yesterday. You said: "I am still of the "above opinion, and now let me put two questions: "A. is a steamship steering due W. B. is a steamship "2° on A.'s starboard bow, and steering E. 2° S.—*i.e.*, "directly for A. Are these two ships meeting end on, "or nearly end on?" Again, "A. is a steamship "steering due W. B. is a steamship 4° on A.'s star-"board bow, and steering E. 4° S. Are these two "ships meeting end on, or nearly end on? In my "opinion the answer should be in the affirmative, and "both ships should port." Will you allow me to add a third question: A. is a steamship steering due W. B. is a steamship 5° on a starboard bow, and steering E. by 5° S. Are those two steamships meeting end on, or nearly end on?—Well, that depends upon the consideration which I have stated here, the absolute necessity of determining what is nearly end on.

5003. But you have not answered my question. Your answer as to 4° is that it should be given in the affirmative, and both ships should port. What do you say as to 5°?—I think, as I have already said in the paper, that I should like to make it 4½°.

5004. Then would you say that at 5° he need not port?—At 5° it would not apply, provided that you decide that nearly end on is limited to 4½°. If you said, for instance, these vessels were nearly end on when they were 4½° on each other's bows, and approaching with risk of collision, then of course it would not apply at 5°; but in practice I think you will find that on board a ship it is very difficult to determine the exact number of degrees.

5005. Then you see where that lands you if that be so. You say that the answer should be in the affirmative as to the 4°, but you will not give me the same answer at 5°?—Well I think it would be infinitely safer for them both to port at 5°.

5006. Then I will go a step further, and say 5½°?—There must be a limit somewhere, and I can hardly point out to you the dividing line.

5007. Do what you will, there must be some point at which that vessel must see the two lights of the other approaching towards her, she herself exhibiting only one light?—Yes, certainly.

5008. Therefore, so long as every one knows what that angle is, they will be able to control their action, will they not?—I do not think so if the angle was very fine: for instance, if she is abeam of you, you would see both her lights.

5009. But no one suggests it under those circumstances; but if you know—assuming it—that every light is screened to 3°, then every vessel knows that if she sees another vessel more than 3° on her bow, she will only be showing herself one light, whereas she will see two from the other one. If she knows that state of things exists she will know what to do; therefore, so long as both vessels know what the screening of each other is it does not matter what the screening is, does it?—I do not agree; I think it does matter very materially. It is impossible at night to know the exact course of the two vessels. I should like to say further that you would be leaving these vessels absolutely without rule—you leave them with no rule at all.

5010. (*Rear-Admiral Andoe.*) By day when ships meet one another nearly end on, the three masts are in a line or nearly in a line, are they not?—Yes. If you put that before you, I think you will understand (*producing a diagram*).

5011. But if the masts are open at all, and slightly on your starboard bow, you do not, I think, cross that vessel's bows to get on to the other side of her, do you?—It depends entirely upon circumstances. If the two vessels are steering parallel courses, no.

5012. I am speaking now of parallel courses?—No; if there was room to pass, certainly not.

5013. Then, instead of crossing the bows, you would give her a little more room, giving your vessel starboard helm, would you not, by day?—Very possibly; but it would depend upon circumstances.

5014. But I mean that there would be no reason for crossing her bows as long as you saw that the three masts were not in line with one another, that they were open, and you had her on your starboard bow?—Pardon me for saying that the masts of the vessel *B.* are all in one line as she is approaching the vessel *A.*, except that she is not absolutely end on.

5015. I am not speaking of your diagram now but simply of two ships passing in parallel courses in opposite directions to one another?—Then in daytime undoubtedly if a vessel is either on the port bow or on the starboard bow, you would not alter your course unless you found you were getting so extremely near as to render some slight touch of your helm necessary.

5016. But then would you cross her bows or keep on the side on which you found her?—If there was room to pass, I certainly should not cross her bows.

5017. But you would give starboard helm, supposing you are on the starboard bow, and keep away on the bow on which you are meeting her?—In daytime.

5018. If it were practicable, would it not be desirable to follow that rule at night, instead of crossing a vessel's bows?—I do not think it is possible.

5019. These rules were made 23 years ago, when the average speed of ships, I suppose, would not be more than 10 or 11 knots at the outside?—Yes.

5020. Now when vessels approach at a much higher speed and attempt to cross one another's bows, they are apt to pass very close to one another much more so than in former days when they were going at a much lower rate of speed?—If you give your vessel too small a helm, certainly.

5021. I mean the mere fact of going at a greater speed would bring them near together much sooner than if they were going half the speed?—No doubt.

5022. Therefore that appears to me to be a reason for not crossing the bow if you can avoid it?—I have not the slightest doubt that hypothetically you ought never to cross a vessel's bows, as I pointed out in the paper you have before you, if you can help it, but at night you do not know how the vessel, which is 3° or 4° on your starboard bow, is steering with reference to yourself, and according to the present regulations for preventing collisions at sea you would port to such a vessel. I know that case has been considered over and over again by different Rule of the Road Committees. I have been on a Rule of the Road Committee ever since the end of 1873, and the conclusion that always has been arrived at was that it was far preferable that vessels steering parallel courses when on each other's starboard bow should starboard, but the difficulties in the way of such a rule were extremely great, and it was thought it would not do to have one rule for a vessel fine on your port bow and another rule for a vessel fine on your starboard bow, and I am afraid that if you had two different rules it would lead to a great deal of mischief.

5023. I do not see any reason for altering the rule, but supposing the alteration of the screening was made, say, for argument sake, we determine to make it finer, the rule would still hold good, that if you sight the vessel's both lights nearly ahead you would port your helm?—Certainly.

5024. But supposing you only sighted the vessel's green light nearly ahead?—Yes.

5025. According to this rule it says that if you only see the green light it is perfectly safe to continue your course?—Yes.

5026. If the lights were screened fine it would be very unsafe to continue your course, but green to green would mean that each vessel ought to give starboard helm to keep clear of one another in that case?—Yes.

5027. I am presuming now that they never sighted both side lights?—Yes, that is so.

5028. Therefore this rule which you refer to here at page 7 would require alteration?—Most undoubtedly, it would not be applicable to fine angles of screening.

5029. This was made to apply to vessels when they were screened at a much coarser angle probably than now?—Yes, I think that is very probable.

5030. And when the speeds were very much lower than than they are now?—Yes, certainly. I do not think it matters very much as to the speeds of vessels, because you must remember that, although they are approaching one another at so much greater speed, still the transverse distance is also performed in shorter time.

*Sir D. Murray.*

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5031. You see a long ship covers a great deal of ground in making a circle, and so far as my experience goes no officer will give a very large helm to clear a ship unless there is absolute danger?—For myself, I have tried to to put it within narrow bounds. I have said porting one point might do, but I have never ported to such a small extent in my life. I have ported two or three points. The helm should be ported at once, and as much as possible, if there is any danger of collision.

5032. But you cannot always do that at sea, I have often seen vessels pass one another with a very slight helm, and very little alteration?—I think that is very rare; with large and swift ships they generally take abundant care to keep out of the way. The officer in charge, say, of one of the White Star ships does not know what any "tramp" that he meets on the ocean may do, and he takes very good care to give that vessel, where it is practicable, such a wide berth that no error of judgment on the part of the officer in command of the "tramp" will prejudice his safety.

5033. Then, if he only sees the green light, he would naturally give starboard helm——

(*Mr. Ismay.*) And plenty of it.

5034. (*Rear-Admiral Andoe.*) And plenty of it; but he would not give port helm, and cross the other ship's bows to sight his light?—No, swift ships in these days do pretty nearly what they like; the regulations were not made for vessels of that kind. Speaking of my own experience, I never paid much attention to the regulations for preventing collisions, but whenever practicable gave other ships so wide a berth as to render collision impossible, in which case, of course, the regulations did not apply.

5035. But in legislating for ships, you must legislate for all classes, so that they will keep clear?—Yes, not only that, but you must legislate for those men who have not great experience or ability.

5036. But it appears to me that as long as the rule remains the same when you sight both lights ahead, or nearly so, and then you give a port helm, the angle of screening would give rather more latitude for giving starboard helm instead of port helm?—Only the unfortunate thing is that in either of those cases the one ship would see both side lights, and the other ship would only see one; therefore, one might port, and the other might starboard; which is what I pointed out in my diagram.

5037. That would be possibly due to yawing?—No, I do not think you can pay very much attention to yawing. I know no more fruitful cause of collision. You have a young or inexperienced officer in charge; he sees first the red and then the green, or first the green and then the red, and at once says, "That vessel is altering her helm," and, in the first instance, he puts his helm hard over one way to clear her; then she yaws suddenly and shows the other light, and he puts his helm hard over the other way; when he sees a collision is likely to happen he puts his engines full speed astern and loses all command of his ship, and so the collision occurs, whereas if he had persevered in his original change of helm he would have gone clear. I can only say that in my experience at the Board of Trade since 1873 I know of no more fruitful cause of collision.

5038. If a vessel yaws and shows her two lights you must deal with it as two lights ahead, whether it is due to yawing or to alteration of the course?—I think not. It is generally safe to port as lights are screened at the present time, but I am very much afraid that if they are screened to a very fine angle it would be productive of very grave mischief. Of course that is only the opinion of one man.

5039. (*Mr. Ismay.*) I should just like to ask you in reference to the position of side lights and the masthead-light; there is a tendency to put the side lights into screens just abaft the forecastle?—Yes.

5040. What is your opinion as to the best place?—My opinion is that you ought to allow the shipowner to place his side lights in any position on board the ship that he thinks proper, provided always they comply with the regulations. I do not believe that placing the side lights at a definite angle with regard to the masthead light would do any good. The subject has been threshed out over and over again. I very much doubt whether in practice you would ever be able to insist upon a definite angle; there are many things which lead the shipowner or the shipmaster to determine in what particular position his lights should be carried, and I do not think you can have a hard and fast rule which would be applicable to all cases.

5041. But supposing that you did make a recommendation in that direction, would it be in favour of placing the side lights abaft the masthead light?—I certainly think it is far preferable, because, as you know, in many of the long passenger steamships it is absolutely impossible to carry them forward of the masthead light, unless they are carried in towers, and those towers would be so constantly washed with salt water that you would get an incrustation of salt upon the glasses, and it would be very difficult to see the lights.

5042. It is because I had in my mind a passenger steamer carrying her lights in those towers that I was pressing you upon it?—I strongly object to towers myself. I cannot object to them officially, but still I do not like them; my opinion is dead against the tower.

5043. (*Rear-Admiral Andoe.*) Would Sir Digby Murray say what he thinks the best position would be if it was optional?—I think the best position for the side lights is the bridge; if there are two bridges, an upper and a lower bridge one above the other, I think, if possible, they should be upon the lower bridge, when I think the officer of the watch will have more attention paid to them, and I think it is the preferable position on board ship in which to have them.

5044. (*Sir E. Harland.*) Quite irrespective of any angle from the masthead light?—It is some years now since I went into that subject, but it was gone into thoroughly at the time by Mr. Thomas Gray and myself and some others, and the conclusion we came to after thoroughly inquiring into the subject was that it was impracticable to have a hard and fast rule for all ships.

5045. (*Captain Halletl.*) Could you tell me how often the lights of vessels are examined with regard to their screening?—I could not answer that question. We have comparatively speaking a small staff considering the duties which they have to perform, and there is always pressure put upon the Board of Trade to decrease their staff. I am afraid that a good deal of the anomalies, so far as the difference in screening is concerned, are owing to the surveyors not having sufficient leisure to inspect all the ships afloat. There is an enormous number of vessels in the Merchant Service, and I have no doubt that many escaped observation altogether.

5046. In the case of passenger steamers, how long do the passenger certificates last?—It all depends; if she is in a satisfactory condition in every way, and we have no doubt about her, then the passenger certificate is issued for 12 months.

5047. Are the lights included in the certificate?—There is a separate certificate for lights, but the lights are inspected every time the ship is inspected for her passenger certificate.

5048. Then what power have the Board of Trade to insist upon a correct angle of screening, and what happens if they find that that angle has been altered after the passenger certificate has been given?—Well, they can insist upon having the vessel's lights re-screened. But we have no guarantee whatever that a ship's lights may not be altered within a week.

5049. That is what I mean?—Until you get a regular pattern, what I may call a statutory pattern of side lights, you never will be safe. There was a case I heard of only the other day, where on one side of the ship one side light had been passed by the Surveyor, and on the opposite side they put a spare light which had not been passed, which consequently was showing at quite a different angle to the other.

5050. You said yesterday that you had never seen a lamp with the inner edge of the wick and the inner edge of the lens in the same line?—Yes.

5051. With reference to the misprint in the Instructions of 1875?—Yes?

5052. If the reading ought to be "lens" and not "wick," what possible good could that be to the angle, because the angle would be to the light, and not the lens?—All I can say is, that it was the merest rule of thumb; up to 1892 it depended entirely upon the position of the wick in the lamps. It depended also

upon the housing of the inner edge of the lens. The whole thing was purely rule of thumb.

5053. But it appears to me that the "inner edge of "the wick" was to obtain the proper angle, and that it could not have been a misprint?—No, it never was intended; that I am certain. I have asked our officers who have had experience of screening lights prior to 1892, and they all tell me the same thing, without one single exception. Besides this if the word wick is not a misprint for lens, then you have this greater anomaly, namely, that the preceding paragraphs, which are in direct contradiction to this wording, have been printed in error, and that all the diagrams have also been printed in error.

5054. (*Mr. Bolam.*) In the paper of further evidence, which you have handed in just now, you have the words, "In former times the screening was from the "centre of the wick"?—Yes.

5055. Would you kindly give me the reference to the instructions? I have not been able to find any?—I cannot say it is in the text of the instructions, but it is shown in the diagrams. Those are the old diagrams,* and you will see a black dotted line. That is the line which indicates the angle of screening, and that, in every case, is drawn to the centre of the wick.

5056. And that black dotted line has always been in the diagram, has it?—Always. Those diagrams have been cut out of the old instructions. The only alteration is the red lines which you see there indicating the angle.

5057. When you make the alteration in the lamp table and correct the average of the angles which you yourself pointed out yesterday was 4° 2′ instead of 4° 30′, will you kindly take care that the words are "not exceeding 4°," in order to make the correction absolutely perfect?—I rather think I worked out all Mr. Ramsay's examples, and I found that the addition of the screen averaged 4½ inches, though in one or two cases they ran to 5.

5058. But these lamps were to be used previous to 1892, and many of them would be fitted with screens, which came much more than 36 inches in front of the lantern, and they might therefore have been used with longer screens?—I have no doubt whatever far longer screens were used, but then at the same time the depth of the chock was smaller—the longer the screen the smaller the depth of the chock.

5059. So you are quite sure that the chock was only 36 inches before the front of the lantern?—Oh, not at all. In many cases it was 4 feet and over. But what I say is the depth of the chock was diminished; the longer the screen the smaller the depth of the chock.

5060. I have not noticed anywhere that you have dealt with the glare of the lamps in the ships. It is a thing which has been complained of in connexion with the new rule of 4° screening. In the old regulations are the words, "Care must be taken that the "screens are 3 feet long, or such greater length as the "position of the light with regard to the screen, and "the distance from the head of the vessel, may render "necessary." If, therefore, side lights were placed well aft under this old rule, and the secondary rays from the lamp crossed within the stem of the vessel itself, then your surveyor could make the screen longer. But with your 4° instruction you have cancelled that power?—But we should never permit the lights to be carried well aft in the vessel.

5061. Then your 4° instruction is, to some extent, interfering with carrying the side lights well aft of the foremast?—Not well aft of the foremast; but we require that the side lights should either be forward of the extreme beam of the ship, or, at all events, that they shall be outboard of the extreme beam of the ship.

5062. With a 4° angle of screening, and the glare from the lantern, you will have an angle of about 8° of light, and if the lights are well aft, then they are sure to have the glare on the forecastle of the ship?—All I can say is, that I have stood forward in many ships, and in or two steamers I have been aboard of lately I could not see any. Mr. Denny the shipbuilder whom I daresay you know very well has just returned from a voyage; he was on board a vessel which carries the electric light and he told me he went purposely and stood at the stern of the vessel, and he could not see the lights without leaning over two or three feet one way or the other.

5063. In answer to questions 82 to 86 in your first day's examination some weeks ago you gave us your view of the meaning of the words "right ahead" in the Regulations for Preventing Collisions at Sea. Do you mean to imply that the word *horizon* in that regulation is a visible horizon of two miles radius? Your words seem to imply that?—I do not think that that was the meaning. All that I meant was that the lights when viewed from right ahead or from an angle of 45° ahead, say four points, should show the same volume of light at all distances at which they might be observed, and although in many instances this has not been the case, practically speaking in a great many it has; and we always required the artillery officers at Shoeburyness when holding experiments to state precisely whether the side lights conformed to that rule or not.

5064. You said that the Board of Trade have always understood "right ahead" in your regulation to mean right ahead of the ship?—Yes.

5065. Mr. Charles Hall, now Sir Charles Hall, at Washington made a statement on the subject. I do not know whether you concur in it or not. You were not a delegate yourself?—I would rather not be asked for my opinion upon anything that Sir Charles Hall has said, if you do not mind; I am quite willing to give my opinion upon any point.

5066. Then I may take it that when you gave that answer which I am speaking about, you did not mean to pin yourself to the opinion that the word "horizon" meant the horizon of two miles radius?—Oh, no, it was merely the arc of the horizon, not the radius of it.

5067. You have said in a paper* you have handed in:—"I am inclined to think the grievance of the pilots "is a sentimental one."—How would you provide against their objection?—I have already stated in one of the papers,† though I do not think it necessary, that the side lights might be placed back to back at the stem of the ship, with a screen of sufficient length to prevent those lights from blending.

5068. In regard to the connexion between screening and collision, I think your view is that the 4° angle will prevent the yawing of a vessel being mistaken for a change of helm?—Oh no, I never said that.

5069. I think in one of your papers you did?—I dealt with the question of yawing in one of the papers.

5070. I think you put it this way; that the yawing of vessels which makes the vessel *A.* appear to show first the red and then the green or the green and then the red to another vessel is very often likely to be taken to be a change of helm, and that is likely to be avoided by making the angle as large 4°?—I have never said so. Yawing has been put forward in defence of a very fine screening, and all I wished to show was how unreliable a defence it was. I have not gone on to say that the 4° screening will prevent this mistake being made.

5071. Then do you think 4° is too small to check any fault of yawing?—No, I do not think any angle you can possibly give would prevent yawing.

5072. Not prevent yawing, but prevent the yawing from being mistaken for a deliberate change of helm?—I am very much afraid that officers and commanders of ships would make that mistake whatever you did.

5073. Therefore one need not regard the 4° angle in connexion with yawing?—Certainly not.

5074. The use of the steering rules in the regulations is to avoid collision after risk of collision is involved?—Yes.

5075. And the use of the side lights is to avoid risk of collision before risk of collision is incurred?—Yes, those regulations are not applicable really till some risk is incurred.

5076. But then first you have side-lights, the object of which is to avoid risk of collision, and then you have steering rules, which are to avoid collision after risk of collision is incurred. I mean the rules and the side lights do not cover the same ground?—I think you must consider the two points separately; the application of steering and sailing rules, and the angle that it is necessary to screen the lights to in order to permit of the whole volume of light being seen ahead, especially in thick and foggy weather.

5077. I asked you that question because the two things have been somewhat mixed up by some of the witnesses. The essential point to aim at in the screening of lights is uniformity?—Undoubtedly.

* *See* Appendix 1, No. 2.

* Appendix 2, No. 7. † Appendix 13, No. 2.

*Sir D. Murray.*

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5078. You want to prevent one vessel showing a good visible light more across her bow than another vessel does?—Yes.

5079. And that is especially desirable in thickish weather, where, as you say yourself, there is more risk of collision?—Yes.

5080. Now thick weather cuts off the reduced rays of the wick very much more rapidly than it would cut off the full rays?—What do you mean by the reduced rays.

5081. The rays from a part of the wick as distinguished from the full wick?—I think I called attention yesterday to the 1893 experiments, and in those experiments, at 500 and 1,000 yards, the lights all showed to the theoretical angle from the outer edge of the wick, and the light shown by the extension of the flame beyond the wick and also the reflection from the lens were totally invisible at those distances.

5082. So that in thick weather the reduced rays would be practically invisible?—Yes.

5083. And what you would have to depend upon would be the full light from the full wick?—Exactly.

5084. When you make a rule of screening from the outside of the wick, the more nearly a physical point your source of light becomes the more completely you would be throwing the whole of the 4° across the opposite bow?—I am not quite sure that I follow that.

5085. Granting that you have a rule for screening from the outer side of the source of light, the more nearly your source of light becomes a physical point the more completely would you be throwing the whole of the 4° across the opposite bow?—Well, does that not depend upon where the whole flame of light is?

5086. I am assuming by my hypothesis that the source of light is as nearly as may be a physical point?—If it is a physical point at the outer edge of the wick undoubtedly that is the case.

5087–8. If it is a physical point there would be no inner or outer edge, it will be simply a physical point. I am supposing that your source of light is simply a point of light and not a wick at all. Supposing it is a single film, for instance, as in the electric lights, the more nearly you screen that to 4° across the opposite bow the more nearly completely will you be throwing the whole flame of light 4° across the opposite bow?—No doubt.

5089. Therefore if you have two ships under your existing rule of 4° screening, one of which has a light, say, of the electric type, which is almost a physical point, and another vessel has a wick, a pretty broad wick, one vessel will be throwing practically the full light 4° across the bow, and the other will be showing the full light at a less angle than 4° across the bow?—I think this, at the present moment, is purely hypothetical. I have had no experience whatever of the screening of the electric light, and I think after your experiments I shall probably be able to gain from you a good deal more than I know at present.

5090. But leaving it upon the ground of mere hypothesis, that would be the case; that if one vessel had a powerful light practically concentrated at a physical point, and the other vessel had a light with a pretty broad wick in use, the first vessel would throw a full light almost 4° across the opposite bow, whilst the second vessel would throw the full light at a smaller angle than 4° across the opposite bow, and especially in thick weather where the reduced rays of the wick light are cut off?—That is very possibly the case.

5091. Then in thick weather what your 4° instruction will do is this, that taking two vessels of these types you might have one of them showing the light which is distinctly seen at a greater angle across the bow than the other one is doing?—Undoubtedly.

5092. And therefore you will be by that method of screening creating the very evil you wish to avoid of having ships' lights in dangerous weather practically showing at different angles?—Well, yes, to a certain extent they would.

5093. I put that as the outcome of your method of screening apart altogether from whether the angle is 4 or any other number of degrees?—You see unfortunately the angle of screening to ensure uniformity must be the same for all ships, but if future experiments show that it is not necessary with the electric light, then I presume an alteration will be made in the instructions.

5094. The best plan evidently will be, will it not, to make a rule which will be useful for a long period of time, in view of the increased probability that the tendency will be to increase the full light? At any rate, is it not more necessary to deal as the regulation prescribes with the full flame of light, rather than to deal with the reduced light?—Providing it is practicable, yes.

5095. If you could do that then it would be best?—It would undoubtedly be best to deal with the full flame.

5096. There appears to be only one solution of that; that is to screen your source of light to the inner edge fore and aft of your chock, and to fix the angle of the outer edge, which you can fix at anything you like, call it N degrees, for example, and you can make that angle be absolutely constant in all ships by simply varying the length of screen according to the size of the source of light?—That is rather hypothetical, and I think in the future it will require very careful consideration and a lot of threshing out.

5097. Of course you have already said there was no possible way of getting over the boundary line between meeting and passing; the boundary will always exist?—To a certain extent undoubtedly, so far as small angles are concerned.

5098. Might it not exist also with regard to large angles?—I do not say that.

5099. If, instead of calling the angle 4° or any number of degrees within which you might consider vessels to be meeting vessels, you call it N degrees; then when you get to the number of N degrees you get to the number of your limit?—Yes, pardon me, I entirely misunderstood you when you spoke about angles; I understood you to mean the angle ships bear from one another, not the angle of screening.

5100. Oh no. There is no possibility of getting over that difficulty, is there?—No, except the finer you screen the greater difficulty there will be, because you cannot screen with absolute mathematical accuracy, and for other reasons, which I need not recapitulate, because it is all contained in my evidence.

5101. There is no doubt that vessels meeting are in danger?—Well, yes, certainly.

5102. And vessels passing are in safety?—That depends upon the direction in which they are passing.

5103. But if they are passing in the modern sense of showing green to green and red to red there will be, in the words of the rhyme, approximate safety at any rate, if not perfect safety?—Yes, provided they were both showing the same thing.

5104. I am using the word "passing" in the sense in which it is ordinarily used at sea, in the sense of vessels passing showing red to red and green to green; I am using it in that sense only?—Still you must remember when vessels are approaching one another at a fine angle, one of those ships may be showing both side lights and the other only showing one.

5105. The general opinion of officers of the Merchant Service who have been examined is that the angle should be as small as possible. They all seem anxious to convert *meeting* into *passing* as soon as possible, and for that reason they desire that the angle should be at a less degree. You do not concur in that?—I do not concur in it, and I very much doubt whether they have given the matter very careful consideration. It has been under consideration for the last 23 years and more in the Board of Trade, and long before I joined it.

5106. Have there been complaints from ships in cases where the angle of screening has been lessened?—No, I can tell you of one man in your own neighbourhood—I will not mention his name—who wrote to the "Nautical Magazine" and to "Fair Play" and other papers, pitching into the Board of Trade and the screening, saying that his lights always had been screened parallel to the keel, and when his lights came to be examined he found they were both screened to 6°, and not only his but every vessel belonging to the fleet were screened to 6°. He then wrote to the "Nautical Magazine," and to "Fair Play" to try and take back what he had said. I saw a copy of his letter, and he afterwards wrote to the "Times" to the same effect, but the letters were never published. They published all the letters in which he pitched into the Board of Trade, but none of them when he withdrew what he had previously said.

5107. But in cases where ships have had their chocks cut down; masters of ships who have come here have complained of cases where an addition has been made to the chock; have the Board of Trade any record of complaints of that kind?—No; but in numberless instances when the surveyors have gone on board a ship to screen the lights, the master has said, "No, "I am not going to permit you to interfere with my "lights; they have been screened in a line parallel "with the keel, and I am not going to allow you to screen them to the 4° angle;" when the master has been persuaded to see what angle the lights were actually screened to, they have been found to be screened to 6° and over.

5108. Usually over 4°?—I will not say usually. I have only the statements which you have already seen, sent in by the Principal Officers.

5109. Officers in the merchant service do not have the means generally—take tramps, for example—of taking a very fine bearing. They could not take a bearing and determine that it was absolutely 4° on either bow, could they?—I do not believe they could exactly in any ship; and then, of course, the bearing depends upon whether you are standing in the middle line or at the side of the ship.

5110. So that in taking bearings to say whether an object is 4° or 3½° on your bow is a practical impossibility in navigation?—Certainly; nor is it necessary in vessels so long as they show both side lights.

5111. In regard to surveyors, tables have been put in showing a very large number of vessels which were screened to 4° when the surveyors examined them in 1893; there just seems to be a doubt as to whether or not any, all, or none of these vessels had had their lights screened after the introduction of the 4° instruction, and before the surveyors who handed in these reports saw them. I asked the surveyor from Liverpool how we could determine when a vessel is altered, and that seemed to be a very roundabout process, not capable of being carried out by any surveyor?—I can only put in the tables for what they are worth; but, as I said yesterday, it was entirely contrary to the interest of all the surveyors to report all this lack of uniformity, because, although they had the excuse that they had no definite instructions before 1892, still they cannot have considered, and I do not consider, that it was a satisfactory state of things.

5112. Mr. Gray's rhyme "green to green," you think, was meant for large angles of screening?—I think so, undoubtedly.

5113. Would you say precisely what you mean by large angles. I presume you do not mean angles of 10° or 12°?—No; I have had to investigate the matter very closely since all these sensational attacks have been made upon the Board of Trade. I always imagined the angle to which the lights were screened was about 3° from the centre of the wick, that is, generally speaking, about 4° from the outer edge, but I have since found that, in many cases, the angle would be greater.

5114. And that, you think, is the angle Mr. Gray had in his mind when he wrote that rhyme?—I am confident it is, because you see I was in communication with Mr. Gray for a very long series of years. I was his colleague on the Rule of the Road Committee, and the Thames Traffic Committee, and all these points have been considered, both by him and myself.

5115. And if the angle were reduced from 4° to a somewhat smaller angle, do you think the value of the rhyme would be less than it is just now?—Yes, I think it would be if you materially reduced it, certainly; and then there is another thing, you must remember it is very difficult to make substantial alterations in that rhyme, which is quoted very nearly by all nations on the face of the globe, eastern as well as western, and if you were to have such an angle of screening as would vitiate that rhyme without due warning it would be very dangerous.

5116. Do you think the service regards this rhyme as anything but a very rough and ready thing?—Well, all the regulations are rules of thumb; when you have a large committee like the Rule of the Road Committee, no one member has entirely his own way; you have to give and take. I do not say the regulations for preventing collisions at sea are all they might be—I do not think they are—but upon the whole I think they are the best we are likely to have, and change is always dangerous, very dangerous so far as seamen are concerned.

5117. I wish to point out to you that you have shown very strongly that the risk of collision occurs with vessels which are approaching nearly end on, very little on the bow, and the puzzle is to know in one vessel what the other is going to do. When two vessels are meeting almost end on there is considerable difficulty in the minds of both officers to know what the other is going to do. One may port and the other may starboard?—There need not be if they make use of the voluntary sound signals.

5118. In the Revised Regulations, which are not law yet, but which will probably become law shortly, steamers when they see each other, which alter their helms, will be compelled to use sound signals, so that that difficulty will disappear?—Yes.

5119. Therefore, upon any view of the difficulty about fine angle of screening and the dangers it may result in, we must view them now in connexion with the new rule?—Yes, but I rather think you must regard the new rule in this way, that the new rule only enables a vessel to do what the regulations require her to do. It does not follow that because a man makes a signal "I am "going to starboard," that he has a right to starboard, or that the other vessel should starboard also.

5120. But if this vessel is in one of the numerous ambiguous situations which we have in the regulations, where the officer must use his own intelligence, and where it comes under the Article "Nothing in these rules "shall exonerate any ship, or the owner or master or "crew thereof, from the consequences of any neglect to "carry lights or signals, or of any neglect to keep a "proper look-out, or of the neglect of any precau- "tion which may be required by the ordinary practice "of seamen, or by the special circumstances of the "case." The whistles will indicate what each is going to do?—Providing they both act in the same way.

5121. Where one is porting, and the other starboarding they will both have time to stop and reverse?—I regret to say there have been many cases where vessels have given the proper signal, and it has not prevented a collision. In the United States there are signals which work well, and I have been familiar with them for 40 years; I mean the river signals, which are somewhat different to those now proposed. For instance, take the Mississippi river, where there are a number of wood piles, and the steamers put into these wood piles to get wood for their fires. A man may tell a vessel coming towards him that he wants to go to a wood pile on the opposite side of the river to that which he ought to be on. Say that he wishes to starboard, he makes the signal to the approaching vessel that he is going to starboard, but he has to wait for a responding signal from the other vessel, and if the other whistles "no, port" he must not go across until the other has passed. We have no such regulation as that with our voluntary signals, and I think it would be difficult to have it at sea.

5122. Of course the system will no longer be voluntary with the new regulations in force?—I think it is a very great mistake to have them voluntary. They ought to be compulsory. In the Thames Traffic Report, which I have laid upon the table, you will notice that many of the witnesses, especially the pilots, were very indignant at the idea of these signals being compulsory. They said they might produce very alarming collisions on the Thames. Subsequently, however, the pilots came to the Conservators for an additional signal, and they said they would not have the others taken from them on any account.

5123. I suppose these signals would not lead to any mistake at sea. Vessels are hardly likely to make the signals at the same time?—It depends upon how near they are to one another.

5124. (*Mr. Scrutton.*) Are you practically acquainted with the way in which the surveyors read these regulations of 1894?—In what way do you mean?

5125. You have your own opinion, sitting in your own office, but have you any experience of the way in which they act?—I am not aware that there is any doubt as to the application of the Board of Trade instructions.

5126. In article 8, with regard to the side lights and the 4° angle, it says, "Surveyors are to insist." In article 10, with regard to the lens, it says, "It is desirable"?—That what is desirable?

*Sir D. Murray.*

18 July 1895.

5127. That the lens should be the arc of a circle?—I think that is as much as we can say, that it is desirable.

5128. They do not reject them altogether, if it is not so?—I do not think we have any statutory power to do that. We must show that the light does not show in the manner required by the Regulations before we condemn it.

5129. Then with regard to the different tints; you say here that you supply the tints to the districts?—You were not here yesterday, I think, when I laid them on the table.

5130. To your own knowledge, when surveyors go on board a ship, do they always have this box of glasses with them?—I have heard lately that, in the case of one surveyor, he had not the box; but it is intended that they should carry the box about with them, and that they should compare the tints of the lenses with these patterns.

5131. Your impression is that they very often do not have them, I suppose?—Until two or three days ago I was always under the impression that they had them, but I understand this is not so always.

5132. (*Rear-Admiral Andoe.*) Are surveyors always supplied with this box?—Yes, every single district in the country; I think we send five to each district.

5133. (*Mr. Scrutton.*) There are 15 surveyors at Liverpool?—Yes, but then every surveyor is not employed at the same time in screening side-lights.

5134. (*Sir E. Harland.*) Reference was made just now to the use of sound signals for making known whether a ship is going to port or starboard. Would it in your opinion be an advantage, where two vessels are approaching one another, and they are each not sure what the other is going to do, that one should be able to indicate to the other what course she is going to take?—I think that wherever two vessels are in sight of one another, and are approaching, that they ought to tell one another what they are going to do; therefore these signals ought to be used in every case.

5134*a*. (*Mr. Ismay.*) In the large steamers using electric lights, would you see any objection to their screening their powerful lights to a finer angle?—Not at all, providing you get the same field, I think you ought to try to get the same field in all ships where practicable, but I have myself so very little knowledge about electric lights, that I do not care to venture an opinion.

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## Wednesday, 24th July 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

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|---|---|
| Rear-Admiral ANDOE. | Captain CASTLE. |
| Captain BARKER. | Captain HALLETT. |
| Mr. BOLAM. | Mr. SCRUTTON. |

Mr. C. HIPWOOD, *Secretary.*

*Staff-Capt. Phillips.*

24 July 1895.

Staff-Captain PHILLIPS called and examined.

5135. (*Chairman.*) What office do you hold, Captain Phillips?—At the present moment I am commanding the "Fire Queen."

5136. What is the "Fire Queen"?—She is a small ship, a tender to the flagship at Portsmouth, and the yacht of the Commander-in-Chief of Portsmouth.

5137. Perhaps you will kindly tell us what your sea experience has been?—44 years I have been actually serving in the Queen's ships, or nearly so.

5138. Have you commanded any ships?—I have commanded one or two small vessels: but my principal work has been as navigating officer of ships.

5139. That is the capacity in which, I think, we are anxious to have the advantage of your evidence. Have you been a navigating officer for many years?—Yes, for many years, since 1857. My last service as such was five years in the "Minotaur," the flagship in the Channel.

5140. Taking such a vessel as the "Minotaur," and the larger class of vessels, what are the red and green lights that they use; are they electric or oil?—The "Minotaur's" were oil lamps, but all the new ships are now fitted with electric lamps; nearly all the modern ships are fitted so that either electric or oil lamps can be used—all the large ships and nearly all the others.

5141. How is that managed? Is the oil light exhibited or ready to be exhibited over the electric light, or does one have to be substituted for the other?—One is substituted for the other; the connection is made through the light box, which is generally used. In the event of any accident to the electric light then the ordinary oil lamp, such as I have a specification of here, is used; but Captain Noel can speak more particularly upon that point, because he has just served for three years upon a ship where this electric light has been used; he can tell you from personal observation.

5142. In the more modern ships are the lights in light turrets, or how are they placed?—I have brought you a sketch of the last Admiralty Order, upon which all the modern ships are based—full sized.

5143. You call it the lantern box?—Yes; this is the Order that bears upon it (*produced*); all the modern ships are more or less fitted in that way. The ships now are similar in construction, with the bridge well forward, the fore part of the ship low, and the lights shown from the sides of the bridge, and practically now all the new ships, except the very small boats, are fitted with this description of light fittings.

5144. This represents the port light, I suppose?—That is the port light, with the metal screen; it is drawn to scale.

5145. (*Mr. Scrutton.*) What is that?—That is showing the side view—a section, so that the light must not be obscured when the ship is rolling 30 degrees.

5146. (*The Chairman.*) I do not quite understand then what this represents?—That is the screen for shading two points abaft the beam—a metal screen; that is the system upon which all the modern ships are based, as far as structural arrangements will admit.

5147. (*Rear-Admiral Andoe.*) How long has that been in force?—I think since 1890.

5148. (*Captain Barker.*) That is built in the ship?—It is generally fitted on the side of the bridge. I have here the Admiralty Confidential Order for fittings. I had this full-sized drawing made so that I could leave it if it was of any use to you.

5149. (*Rear-Admiral Andoe.*) Is that the book supplied to the dockyard?—To the dockyard for fittings. This of course would be private; it embraces other things—fittings of guns and other matters.

5150. (*Chairman.*) Is this lantern box a fixed structure?—Yes; the lamp drops in from the top. The

top of the box turns up on a hinge and the lamp drops in so that the bottom of the lamp fits into place, and when it is in there the lamp cannot twist, or turn about, or move either way, so as to alter the angle.

5151. (*Rear-Admiral Andoe.*) The box is not glazed, is it?—Oh, no; there is an open hole *here*, coincident with or opposite to the glass of the lamp.

5152. It is not glazed, there is no glass in the box itself?—No.

5153–4. (*Chairman.*) When you have the 3-feet screen, do you have a chock?—I went round every ship in the Fleet Reserve, and I have tabulated what I found here so that I thought you would be able to see the particulars at once. The table* embraces specimens of the modern ships and a good many old ones, some have a chock and some have not. "Royal Oak" and "Revenge" are two sister ships, one has a chock and the other none; there are other slight differences too. "Royal Oak" has a wooden chock 4 inches deep. There are here specimens of all ships built, battle ships, first-class cruisers, second-class cruisers, and smaller ones.

5155. Where there is no chock I suppose the screen is so placed that it operates as such?—Yes. The principle is carried out so that the light is cut off as directed.

5156. Where is that 3-foot screen measured from—is it the length between the fore part of the lamp, and the end of the screen?—Yes, and there has been some looseness, as you will see, there. In some cases the chock is not put quite at the end of the screen, and the practical screen becomes less than 3 feet.

5157. I see in one case it becomes as little as 2 feet 6 inches, and in other cases it rises to 4 feet 4 inches?—That is the whole length of the screen. Of course in some of the vessels it is almost 40 feet; in some of the old-fashioned ships, owing to the structure of the ship, the lamp is put on the side of the middle building, and the lamp has been placed to make the angle, so that as a matter of fact the screen has been 40 feet long.

5158. (*Captain Barker.*) The side of the battery, I suppose?—Yes, in some ships. You may take it that the plan I have shown you is the general principle upon which all our ships are fitted now, wherever possible. Of course in some small torpedo boats you cannot possibly do that.

5159. (*Chairman.*) I see in addition to a forward screen, you have a screen for the two points abaft the beam?—Yes.

5160. Now what I should like to ask you is, how do you secure the angle, of these lights?—It is done practically in the first place, the screens now are fitted so frequently; it is more or less laid out in the mould loft to scale, if not in full length, and according to the transverse distance between the lights, or the size of the ship. Both elements come in, whether the ship is very large or the transverse distance is great, then a point is taken 200 yards ahead of the ship, and the screens are arranged for that.

5161. So that instead of having your screen made so as to give a particular angle from a particular part of the wick, or the outside of the lens, whatever it is, what you do is to regulate the lamp and screen so that the lights cross at a particular point?—Yes.

5162. What is the point at which you think it right to make the lights cross?—I cannot say definitely what is the size of the ship or the actual number of feet in transverse distance which regulates it. But in ships with a large transverse distance it is 200 yards, and in ships with a small transverse distance it is 150 yards. There does not seem to be a hard and fast rule; it varies between these two. I have a list† here which shows the transverse distance of a certain number of ships, and the distance from the transverse line to the stem.

5163. In the first one, the "Royal Oak," the transverse distance between the bow lights is 60 feet?—That is from the centre of one light to the centre of the other.

5164. Then the distance of stem from transverse line is 122½ feet?—That shows how far the lamps are from the bows; you will see one or two I have picked out. They are very close forward.

5165. The distance from the stem to the transverse varies very much indeed, and I see in one ship, the "Calliope," it is as little as 13 feet, and it rises in the "Royal Oak" up to 122½ feet, and there are no two cases which are the same. And then you say the distance at which you make the lights cross is something like 150 to 200 yards?—Yes, it ranges from 150 to 200 yards.

5166. (*Mr. Scrutton.*) From the light or from the stem?—From the stem. These are the Admiralty orders that are carried out. I can leave that table of measurements if you wish.

5167. I do not know whether you so adjust the distance as to have any reference to an angle formed by the screen?—No, it is not done as far as I can make out. I have consulted with many of the people that have to do this work practically.

5168. You know the Board of Trade Instructions since 1892 say the lights are to be screened to an angle of 4°. I only want to know if the Admiralty, in fixing their screening, have any reference to that rule, or whether they act independently of it?—No, it is not mentioned, and I have not heard it mentioned by anyone who has had anything to do with it. Those are the orders* carried out—(*produced*)—and the lights are always tested. After the ship is fitted with bow lights, there is a joint test by the constructing department, those who fit them, technical men, shipwrights, and a sailor representing the Fleet Reserve. They have a joint practical test of every ship, and a certificate is given by the officials from the Fleet Reserve that the lights have been tried in place and found correct before the ship is accepted by the Commander-in-Chief as fit for sea.

5169. And that is conducted at Chatham by the Commander of the Naval Reserve?—Yes, and at Portsmouth. One of the constructors give me a practical account of how he carried out this order, and the manner in which the test is carried out.

5170. I see. "Arrangements to ensure that screens are "properly fitted. The Board of Trade regulations "with reference to the following are observed:—

"*a.* Length of screen.

"*b.* Angle of light abaft the beam.

"*c.* Distance ahead for both lights to be seen, &c.

"(*a.*) This is given as 3 feet from front of lantern, "being in a fore and aft line generally.

"(*b.*) The position of screen governing this is obtained "as follows: A temporary screen made to slide, in or "out, is fitted abaft the lantern, and the correct "adjustment made at night. The lantern is fixed in "its place, lighted, and an observer placed some 200 "yards from it, a position two points abaft the beam "being tried, and then on to three points, the slide "being adjusted by signal from the observer to those "on board the ship, until the correct conditions are "fulfilled.

"(*c.*) A distance is set off ahead of the vessel on the "line of keel (200 or 150 yards off), the foremost end of "screen blocked off, until the requirements are met, "the adjustments being made by signal from the "observer on shore. The signalling is pre-arranged "between those in the ship and the observer on shore, "and is done by means of two lanterns carried by the "latter. The Commander of Dockyard Reserve and "foreman of the ship are at the point of observation, "the inspector at the bow light screen on the ship." That shows very clearly exactly what was done. Can you tell me what oil is used?—It is a vegetable oil, no mineral oil is allowed on board our ships.

5171. Then I suppose the wick is a very broad one. What width is it?—I think I have it in a specification here. I will send you up a specification of the wick.

5172. Do you think you can tell us exactly what it is?—I have brought a specification of the Admiralty masthead and bow lights which perhaps you would like to keep, possibly the wick may be described there.

5173. (*Mr. Bolam.*) Would you ask the witness, please, whether that crossing at 200 yards ahead of the ship is a crossing from the inside or the outside of the wick?—I may observe it is the point at which both lights are seen clearly.

5174. The inside?—You clearly see the light, and from this point of crossing the light dies away towards the stem of the ship.

5175. (*Chairman.*) What I understand you mean is, as they walk towards the ship the light diminishes?—

* See Appendix 14, No. 1. † See Appendix 14, No. 2.

* See Appendix 14, No. 3.

*Staff-Capt. Phillips.*

24 July 1895.

The light is seen and first seen clearly at that point; as you walk towards the ship it begins to fade away.

5176. Supposing you were walking towards the ship, you would first lose the rays from the outside of the wick.

5176*a*. (*Mr. Bolam.*) It depends upon whether the witness means the full volume of light would cross at 200 yards or only the faintest rays?—The crossing point is the point at which both lights are seen clearly.

5177. The full body?—Yes. I would simply say the light is seen clearly from that place and from that distance it begins to fade as you near the stem.

5178. There is another point. When the witness says the lights must cross 200 yards ahead of the ship he means ahead of the stem and not ahead of the lanterns. You mean clear of the hull of the ship and not clear ahead of the lanterns, which may be anywhere?—Yes.

5179. Because in the "Royal Oak" 200 yards ahead of the ship means 600 feet plus 122 feet ahead of the lantern?—I am quoting now the Orders: "The "screens ahead should be so fitted that an observer "approaching from right ahead should see the full "rays from a point from 200 to 150 yards forward of "the stem."

5180. (*Chairman.*) I should like to ask about the 2 points abaft the beam. I see the Admiralty think it necessary to have a screen so as to prevent the rays being seen more than 2 points abaft the beam?—Yes, I think if you look through that tabulated list of ships the majority of those have a screen—certainly the new class ones where the light-box is built up on the bridge.

5181. So much for the oil lamps. Now, with regard to the electric lights, have you ever been on a ship where electric lights were used?—No, I have never served upon them, but Captain Noel has; he has just served three years in the "Royal Sovereign," and he will be able to explain that fully.

5182. And I suppose he will know about what sort of filament is used and what sort of lens?—Yes.

5183. As the Admiralty have taken this view about the crossing lights, I suppose you have never directed your attention specially as to the particular angle at which the lights are screened?—The authorities simply carry out their orders, and you see there is a great difference in the length of the after screening; some are screened up to 14 or 15 inches and some are placed at an angle aft of 20 degrees in order to fulfil the requirements. Of course the same principle is aimed at all through, cutting off the light to be seen a specified distance ahead, and also the regular distance and angle abeam; the full light only at 2 points abaft the beam, and never more than 3. There is one thing I should like to point out in our ships. I do not know whether it is so in the merchant service, but several of the screens in our ships are so arranged as to fall back, to turn in-board, either altogether, or a part of it on a hinge. In my opinion, speaking as a sailor, it should be forbidden, because the screen may be left in and forgotten, and the light may show across the bow and cause the very trouble which this question of screening is trying to prevent.

5184. Now, although you have not considered the question of screening, I do not know whether you have formed a view as to whether fine screening is preferable or not to coarse screening. You know that is the question which this committee has to consider. The Board of Trade have taken the view that it ought to be at 4°, and other persons think it ought to be much finer; but apart from the particular angle at which it should be, have you formed any opinion whether fine screening is better than coarse screening?—I should like to get in between the two extremes. I think moderate screening would be right. I think that coarse screening leads to your seeing the light too much across the bow, and in very fine screening you may be nearly ahead, all but ahead, and not see the other light.

5185. But supposing you can ensure that you see the light at a perfectly sufficient distance ahead, so that there can be no question of there being any obscurity ahead of the vessel, can you see any object in having the light screened more coarsely than is sufficient to effect that object?—No, I do not.

5186. (*Rear-Admiral Andoe.*) Perhaps Captain Phillips is not quite aware of the contention which at present exists between the Board of Trade and shipping interests upon this point, and I should like to explain to him that the old instruction the surveyors in fitting lights in merchant ships was "If the surveyor finds that the red "and green rays cross each other, he should, of course, "have the defect remedied at once. There are many "ways of doing this, for example, the screen may be "lengthened, or another board may be placed outside "it (fig. 4) or a chock (equal in thickness to the distance "between the inner edge of the lens and the side of the "screen) may be secured to the fore end of the screen "(fig. 5), or the lamp may be so placed that the outside "of the screen will come against the inner edge of the "lens (fig. 6); or the screens may be so placed that the "distance across the ship between their outer sides at "the fore end shall be equal to the distance between the "inner edges of the lenses of the two lamps (fig. 7). If "the red and green rays cross each other immediately on "passing the stem, the red light will be seen on the "starboard bow and the green light on the port bow, as "shown in fig. 8, but, on the other hand, if they do not "cross, at least to a slight extent, then they cannot "both be seen ahead. The real points to be studied in "fixing and arranging the inboard screens appear to "be, first, to ensure that the rays of the red and green "side lights do not cross each other immediately on "leaving the ship, nor at all more than is possible; "and secondly, to ensure that the distance ahead "within which neither light is seen is not greater than "can be avoided." Those are the original instructions to the surveyors for fitting screens. That practically meant, I presume, that the lights should be so screened that they would not cross the stem more coarsely than necessary. Then lately in 1892 an order was given to the surveyors that all screens were to be fitted to 4°, *i.e.*, set at an angle of 4°, so that the rays from the outer edge of the wick should cross the stem at an angle of 4° each side, and the shipping interests, the captains and owners, object to it as being too coarse a screening. The contention of the Board of Trade is that if you set the screen at 4°, and not less than that, two ships meeting each other will see when they bear 4° on each other's bows, for instance, both lights ahead or nearly ahead, and will port their helms according to the law and so cross one another's bows a little, but unmistakably, with port helm?—4° in my opinion is too much. You see electric bow lights at a great distance, and when there are a number of ships ahead, you may be endlessly running off your course, and getting into trouble when crossing the bow of a ship, of which you were already passing clear. I think 4° is too much.

5187. According to a calculation Mr. Bolam made, the Admiralty system would be 2½°. Do you see any objection to that being the practice?—No, I have not gone into the figures, but speaking practically I think it is a very fair working angle. I am quite opposed to having no angle, because otherwise in a very broad ship you would have a great dark lane for some distance ahead; it would not be very often, but it might so happen that a vessel whose line of keel was in the same line as that of another ship, might come within that dark lane without seeing her.

5188. Mr. Gray's verses, which we have heard, and which we do not use in the Navy: "Green to green, "red to red, perfect safety, go ahead," were made 23 years ago?—Yes, as far as I know.

5189. The Board of Trade rather contend that if you screen finer than 4°, two ships passing each other on parallel courses in opposite directions, bearing 2° or 3° on the bow of each other, will, if they see only the green light each continue their course and pass too close to one another, and perhaps come into collision. Do you see any reason, as a seaman, if you see a green light on your starboard hand why you should not give starboard helm, and give her a little more room instead of crossing her bows?—Certainly not, if you are at all in doubt, and especially if the light is seen nearly ahead.

5190. And considering those rules were made many years ago, when ships were very much slower than now, would it not be desirable that some alteration should be made so as to prevent unnecessarily crossing the bows at the much higher speed at which vessels now travel; where vessels now would come closer than they would when the rules were originally made?—I do not think you have any right to port if you see a green light on the starboard bow.

5191. No; but if you set those screens at 4° you will see both lights, and according to the law you would have to port although a vessel was 4° on your bow?—I thought you were speaking of seeing one light only.

5192. Yes, I was. Of course, if you see a green light only you would not cross the bows, but with a large angle of screening you would see not only that, but you would see both; if you were screened to 4° you would see both lights, and instead of being able to keep on your course on the side on which you saw the ship, you would, according to the law, have to port?—Well, I think with coarse screening in close quarters, such as in the Channel, you would be continually sheering away unnecessarily and possibly move from a position of safety to one of danger, by trying to cross to starboard where vessels were going at great speed, and the distance was misjudged.

5193. I merely put it as clearly as I can before you, because you have not heard what the discussion was about?—No, I have not heard about the particular point.

5194. Then you think 4° is quite an unnecessarily large degree of screening?—Certainly too much.

5195. (*Captain Barker.*) You say 2½° is about the angle at which the lights cross?—I accept the calculation made here. I would not like to pin myself to any number of degrees, because I have not gone into the matter. I take the distance arranged as far as I am concerned for any base (that is the 200 or 150 yards from stem).

5196. It seems to me that it would not be very difficult, with the regulation of the Board of Trade, of 4° from the outer edge of the wick, for the full light to be seen 200 yards ahead?—My belief is, at this distance of 200 yards, or 150 yards, as the case may be, the full light may be seen, but I know of no trials with a fixed angle of 4°.

5197. Then I suppose you get the ship against a dock, or something of that sort, to ascertain that?—Yes. It is usually done in our basins. If necessary the ship is moved so that these conditions can be practically tested, and are tested; and the ship is not accepted as fit for sea, or fit to pass over to the Executive Admiral, till the certificate is given that the lights have been tested and proved in place to fulfil the conditions laid down.

5198. Do you find any difference between the power of the two lights—do you find that the place where the full red light crosses the bow is different from the place where the full green light crosses the bow?—I cannot tell from practical experience. I have not tested the lights in that way myself.

5199. You have not noticed anything particular in testing the lights?—No.

5200. You have not noticed any difference in the power of the lights?—I can only judge with my own eyes, I always see a red light before I see a green one.

5201. I am supposing now you can walk down right from a position ahead of the ship, towards the ship, until you dim the lights; you would dim the green one sooner than the red, would you not?—I think so, but I have not tried it, excepting in making out lights ahead. I always see the red light before the green.

*Staff-Capt. Phillips.*

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5202. But I do not know whether you found the full crossing point of the red light was different from the full crossing point of the green light; have you noticed that practically?—No, I have not, it has not been within my province to test the lights. I have talked with those who have and have got all the information from them, but it has not been within my province to to do it myself.

5203. (*Mr. Bolam.*) In the early days when there was no Board of Trade the Admiralty had full control of the question of side lights?—I cannot say about that.

5204. Are you conversant with the history of it?—No.

5205. You do not know anything about the sizes of of the wicks employed in these vessels, I suppose?—I can only tell you the size approximately, but I promised to send up specimens of the dockyard pattern wicks, and I will send you them up in a couple of days' time.

5206. (*Rear-Admiral Andoe.*) Have you got the specification there of the sizes?—Yes, of the lamps, and possibly they will give the sizes of the wicks.

5207. (*Chairman.*) There is one thing I am not able to understand. The Board of Trade Regulations with reference to the following are observed: "*a.* length of "screen; *b.* angle of light abaft the beam; *c.* Distance "ahead for both lights to be seen," but there is no Board of Trade Regulation about the distance ahead for both lights to be seen. That is not a matter that they take into consideration at all. I do not quite understand that?—No, this is a copy of the instruction for the Fleet, and Dockyard Reserve; they do give a distance there.

5208. They do, but I mean that the Board of Trade do not issue any order, or take any account of the distance. They regulate their screening by a totally different method, by taking the angle of 4° from the the outside of the wick, and before they used to regulate it by a line drawn either from the inside of the wick or the inside of the lens, not the distance at which the lights would cross. I do not quite understand how the Admiralty came to speak of the Board of Trade Regulations being observed. That is not a matter that the Board of Trade placed any reliance upon, unless they mean that their plan of fixing the crossing point is equivalent to the Board of Trade Regulation of 4°?—This was a practical description by the foreman of the shipyard who has charge of this particular work at Portsmouth, and I have just copied it out as he has sent it to me. I should say he made an error probably in using the words "Board of Trade." It may be "carrying "out the Admiralty orders as far as possible." No doubt he thought it was the Board of Trade.

Commander Noel called and examined.

*Commander Noel.*

5209. (*Chairman.*) Would you be kind enough to tell me your nautical experience. What office do you hold now?—I am commander for navigating duties. At present I am in the "Majestic," but I have been three years in the Channel fleet in the flag ship.

5210. As navigating officer?—Yes, previous to that I was second in command in the Anson.

5211. Have you navigated big ships?—Yes.

5212. Of the modern type?—Yes, the "Royal Sovereign" was my last ship. I was three years at sea in her.

5213. Have you been in vessels that have had the electric lights as well as those that have had oil lamps?—Yes.

5214. Recently? What is the last vessel you have been in which had the oil lights?—I think the "Iris" was the last ship I was in that had oil lights. That is about eight years ago.

5215. Was she a big vessel?—No, a 4,000 ton ship.

5216. A cruiser?—Yes, a cruiser.

5217. And she was fitted with oil lamps?—Yes.

5218. We have been told you do not use mineral oil in Her Majesty's ships?—No, we do not.

5219. How were her lanterns fixed—in a lantern box or something of that sort; do you happen to remember?—No, I do not.

5220. Whereabouts were they?—I think they were just under the fore bridge. That was about 60 or 70 feet from the bows.

5221. And you would not remember, I suppose, what the breadth of the wick was, that these lanterns carried?—No.

5222. They were certainly vegetable oil lamps?—Yes.

5223. Do you remember anything about the screening of the lights on that vessel. Were they screened with a screen and a chock; or how were they screened?—I could not say; it is too long ago.

5224. Then I should like, please, to come to the use of the electric light in the "Royal Sovereign." How was that carried—in a light turret, or how?—They were carried simply in an iron frame made to fit the lantern box with a small lid on top. You simply let the lantern down into it and put the lid on.

5225. Had you any apparatus for substituting oil in case the electric light went wrong?—Yes.

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5226. Is that carried in the same box?—Yes, you take one out and put the other in.

5227. That, of course, would involve, whatever trouble there may be, in taking the one out and putting the other in?—Yes, so that they could light the lamps, and let them burn. They are kept close to, and ready so that it is only a matter of a moment lighting them, because the wicks are all ready.

5228. Those electric lights, did you ever happen to observe what number of filaments they had in the lamps; I suppose they were incandescent lamps?—Yes.

5229. How many lights were there; do you remember whether there was one incandescent light, or a group of lights?—I am not absolutely certain. I think there was only one burner with a single filament in it.

5230. Have you found in practice that the electric lights are liable to go out?—I have never known them go out.

5231. So that practically you think the electric light is a great improvement upon the former oil lamps?—Yes.

5232. You have no practical difficulty either in getting up the illumination or keeping it?—No.

5233. Do the lamps last a fairly long time; do you know if you often have to put in a new one?—I have never known the lamps to go out in that way.

5234. Now about the screening of these lights; have you noticed how that is effected?—There is a fore and aft screen, about three feet long, of iron, and the iron box—the circular iron box—contains the lantern and is made solid for about three inches. Then there is the glass, and the chock is placed on *here* so as to allow the light to show—it is roughly 3°—across the bows. It is done experimentally; they are placed at a distance of 200 yards (*describing*).

5235. That is supposed roughly to be about 3°?—Yes.

5236. That is the object which you desire to attain?—Yes.

5237. And for that purpose there is a chock brought to a certain point, which you say is determined by experiments?—Yes, it is done in the dock, and the man has two or three chocks and puts one a little thicker than another until he gets the right angle.

5238. It works out something like 3°?—I think about 3°.

5239. Now, I should like to have your opinion about this. I suppose you have not formed any opinion with reference to the actual angle of screening in that way?—No, nothing specially.

5240. But speaking more generally, what do you think as to the coarseness or fineness of screening; do you think it desirable that lights should be screened more finely?—More finely, I think.

5241. It is a practical question. You see the Board of Trade at present take the screening at 4°, and the view of a large number, at any rate, of the mercantile marine world is that 4° is too coarse, and they think it ought to be considerably finer. The view of the Board of Trade, as I understand it, is that if you have two vessels approaching 4° on one another's starboard bow, each would see both lights of the other, and under those circumstances they think it is a good thing that each should port their helms and cross each other's track. The view of a considerable number of persons engaged in practical navigation in the mercantile marine is that that is too coarse, and it would be better to have the screening finer, so that the vessels do not see both lights as much as 4°. As I understand you, your view rather inclines to a finer screening being the better?—Yes.

5242. One thing is put forward on behalf of the persons who think the broad screening desirable, namely, that supposing you were screened less than 4°, say 2°, each would see the green light of the other, and if each ship kept exactly the same course, 2° different, they would pass very close indeed or collide. One of the answers given by persons engaged in actually navigating vessels is that under those circumstances there would be no danger at all, because each vessel would naturally give a slight touch of the helm and so go sufficiently clear. May I ask you whether you take the view that there would be any position of danger supposing the vessels saw one another green to green under these circumstances, or whether you think the danger could naturally and easily be avoided by each vessel giving a touch of the starboard helm?—Well, I think vessels meeting as near as 2° would naturally port. 2° is practically right ahead.

5243. But I am taking the case of seeing the green light, of course you would not port to a green light alone?—Oh no; when the red is not seen?

5244. Yes, you see they are screened 2° and each vessel is 2° or perhaps more on the starboard side of the other?—Yes, I see.

5245. Each would see the green?—Yes.

5246. Under those circumstances do you think there would be any practical danger?—No, I do not think there would.

5247. Under those circumstances I suppose it would be natural, would it not, for each vessel to give a slight touch of starboard helm?—Yes.

5248. However slight it would secure their passing clear?—Yes.

5249. So that you see no reason to object to a screening as fine as 2°?—No, if you only see the green light the ship may be passing like *that*; the ship *here* naturally coming down would sheer off enough to clear the rest of the vessel.

5250. Of course it is obviously the duty of the man on the look-out and the people on the bridge, not only to act when they see a light, but to watch and see what it is doing?—Yes, undoubtedly.

5251. And if two vessels keep on approaching one another under those conditions, I suppose it would be clear to the mind of anybody that his duty would be to give a slight touch of starboard helm?—Yes.

5252. (*Rear-Admiral Andoe.*) This law was made originally for passing ships, more than 23 years ago when ships were much slower than they are now; the fact that ships travel much faster now would, I suppose, strengthen your opinion in favour of finer screening. Vessels approaching one another at 15 or 16 knots each, each 4° on the other's starboard bow, have at present to port their helms and cross one another's bows?—Yes, I think that would make a ship uncertain. Well, if there is such a large range across the bow, I think it would make an approaching ship uncertain what to do.

5253. Of course the law lays down that if you see both lights at once nearly ahead you are bound to port your helm, that is clear?—Yes.

5254. With a 4° angle, whether you think it necessary or not, when you see both lights you must port your helm to keep within the law?—Yes.

5255. But in many cases would it not be unnecessary to port the helm at all if you continued your course and gave a little starboard helm; supposing you did not see both lights there would not be the necessity to cross the bow?—You may have to port and traverse in only two miles something like 400 yards.

5256. I believe we have not altered the angle of screening in the Navy, we still screen as formerly, but in the merchant service they now set their screens to 4°?—Yes.

5257. And the mercantile marine take exception to it, and consider that too coarse an angle because it makes them cross the bow unnecessarily?—Yes.

5258. Is it quite clear to your mind that it is unnecessary to cross the bow at that angle?—Yes.

5259. (*Captain Castle.*) I think I understood you to say that seeing a green light a little on the starboard bow you would starboard only if you thought you were getting too close?—Yes.

5260. (*Captain Hallett.*) Can you tell me what the diameter of the "Royal Sovereign's" tactical circle was?—660 yards.

5261. That is the diameter of the circle in which she turns?—Yes.

5262. At what speed was that, can you remember?—Well, that was done at 12 knots; but it varies very little.

5263. Can you remember in the early part of the circle how far she went for the first quarter?—How far ahead?

5264. How far ahead, and how much transfer, and how much the advance was?—Well, the advance was roughly 500 yards.

5265. In the first quarter?—Yes.

5266. Can you tell me what the transfer was roughly?—No.

5267. (*Rear-Admiral Andoe.*) I suppose about a third of the radius?—Yes.

5268. (*Captain Hallett.*) I did not know whether you remembered it or not. What is her beam?—75 feet.

5269. Have you, steaming at night in close order with a similar ship astern of you, ever been able to find a dark lane—that is where you could not see either of the next ship's bow lights? What was the closest distance you have been at night in that way?—I dare say 50 or 60 yards.

5270. And you have never found yourself in a position where you were in what is called a "dark lane"?—No, I have never seen it; but I will not be absolutely certain.

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5271. But in your experience you have never seen it?—No.

5272. Although you have been both on the bridge and in the after part as well?—Oh yes, right aft.

5273. Which makes a great deal of difference in the length?—Yes.

5274. You have never experienced that?—I have never seen it, no.

5275. (*Mr. Bolam.*) Do you know the width of the wicks at right angles to the keel in any of the ships you have been in?—I am afraid I do not.

5276. Or what was the width of the filament in the electric light, from outside to inside?—No; it depends, I think, upon the way it is put in.

5277. You do not know it?—No, I do not.

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## Thursday, 1st August 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

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|---|---|
| Rear-Admiral ANDOE. | Captain HALLETT. |
| Captain BARKER. | Sir E. HARLAND. |
| Mr. BOLAM. | Mr. SCRUTTON. |

Mr. C. HIPWOOD, *Secretary.*

Staff-Commander EDWARDS called and examined.

*Staff-Commander Edwards.*

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5278. (*Sir E. Harland.*) [*In the absence of the Chairman.*] I believe you have been at sea a good deal?—I have.

5279. And have you settled down to some post on shore?—I have not yet.

5280. So that you are not in a position specially to superintend or to watch the question of the screening of lamps?—At present no, I am not; I retire on Saturday; then I shall be.

5281. I should like to ask as to your experience at sea with reference to the character of the red and green lights; have you found the lights supplied pretty uniform in their strength?—Very.

5282. And in the character of the light?—Very.

5283. Have you found that they were, so far as you are able to judge, pretty accurately screened?—They are all tested and actually tried before the ship passes into the Fleet Reserve.

5284. Were you aware of the angle at which your lamps were screened?—I can tell you what they were by working them out, otherwise no. They cross at 150 to 200 yards according to the regulations and are actually tested.

5285. That is to say that the lights were open at 150 to 200 yards ahead of the vessel?—Yes, depending upon the beam of the vessel.

5286–7. (*Chairman.*) You were telling the Committee the present rule, I gathered, which regulates the screening in the navy?—Yes.

5288. What seems to govern their view is the distance ahead of the ship at which the lights cross?—Yes.

5289. And that has always been the way in which they have had them?—They actually test them at night; we get them in the dock, measure the distance and actually screen them to that; we put fillets on the end of the screens where necessary and each ship in the dockyard is tested before it is allowed to go into the Fleet Reserve.

5290. Do you have a check on your screen?—Yes, some of them, those that need them; on those that do not, of course, we do not put the check.

5291. You are aware, I suppose, of the rule the Board of Trade requiring lights to be screened to 4°?—Yes.

5292. The Admiralty have as a matter of fact made no alteration in their practice from what it was before 1893?—They have not.

5293. I do not know whether the Admiralty consider that the 4° angle of screening is right, or whether they abstained from adopting it because they thought it unnecessary?—I do not know; we simply have kept to the same rule as we had before 1892. They cross at 200 yards for a large ship, and 150 for smaller vessels; it depends upon the distance between the two lights.

5294. Have you yourself considered this rule of the Board of Trade of screening to 4° from the outer edge of the wick?—I have only taken a cursory glance at the rule; I have never gone into the matter of the 4° screening. It strikes me that at the end of the two miles distance, the shortest limit at which the lights should be seen, the base is much too large; in fact a great deal too large.

5295. I wish to have the value of your opinion upon the question as to whether you consider 4° unnecessarily large?—I do certainly.

5296. Do you see any danger at all in having a finer dégree of screening than 4°?—No, I think it would be matter of safety—I think it would be safer. Of course, making it a smaller angle would reduce the base at that distance of two miles, so that we have not so much transfer with the ships meeting end on; for instance, take the case of two ships meeting nearly end on, each on the other's starboard bow; if each was just within the other's three lights they would have a long distance to cross to the other side, in obeying the rule which tells them to port, if the three lights are seen nearly ahead; therefore, if you lessen that distance he would not have so far to go.

5297. You do not see any reason for having so broad a base?—No, it is unnecessarily large, more especially with long ships going at great speed as they do now.

5298. The greater the speed the more risk there is of collison, if crossing has to be done?—Yes, and the less time there is to see the light; and every second is of

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importance to a man when he looks at a light, and has to decide what action he will take.

5299. Are the lights used by the Admiralty usually placed as in merchant ships, or in turrets?—It depends entirely upon what a ship is like. It is almost always different; in old ships they have them let into the bulwarks of the ship itself; others have simply a screen put on top of the gunwale and others have a screen under the bridge; it depends upon the arming of the ship, everything has to be sacrificed to the arming of the ship. You give them an uninterrupted light, but of course if there are guns or torpedoes, or anything of that kind in the way, lights must go elsewhere. Knowing that I was coming here I got a list* of a lot of the different types of ships we have, to show the distance between their lights; for instance, the "Hussar" a torpedo destroyer, the distance between the lights is 23·3 and the distance of the light from the stem is 68·3. The "Agamemnon" is only a few inches more and 138 feet from the stem; the lights are on a bridge which passes round the funnel, therefore they increase the base of that very little. In another ship, the "Belleisle," whose beam is not so much, the distance between the lights is 49 feet, more than double. It all depends upon the guns and armaments.

5300. As a rule you do not seem to put them at the end of the ship or anything like it?—You cannot do it in turret ships, because they are all so low. As I said, the type of the ship, and the guns, and the armament, have to be considered first now. After they have completed the ship, then they put the lights in.

5300*a*. (*Mr. Bolam.*) Will you ask the witness, sir, whether in the case of the "Agamemnon" the lights cross at 200 yards.

5301. (*Chairman.*) That is the very question I was going to ask. When you say the lights cross at 200 yards ahead, what do you take as the mean distance between the two lights?—We take whatever the distance may be; we converge the lights to that, and allow the screen to suit that.

5302. Whatever the distance may be between the lights, you make them all cross at from 150 to 200 yards ahead?—The lights are put in after the ships are completed so far as the dockyard is concerned. In the dockyard there is a distance measured on the shore on purpose for the lights, and if you find the lights are too much open the angle is altered so as to make the lights cross at the proper distance by putting a fillet on at the end of the screen. We actually make them cross at that point; no matter what the beam of the ship is, they have to cross at that particular point. At the crossing point we see the light full, and then as we walk towards the bows, the light gradually disappears, till I think about 60 yards from the stem of the ship it is all darkness.

5303. (*Mr. Bolam.*) Then that ship's lights could not cross 200 yards ahead of the ship?—Oh, yes; they are all made to cross there.

5304. So that you have a half base of nearly 12 feet to the perpendicular of 600 feet?—Yes.

5305. (*Chairman.*) Is the 200 yards measured from the lights, or from the stem of the ship?—From the lights, the base of the lights, because the "Agamemnon's" lights are far aft, but they are on the bows in the other cases.

(*Chairman.*) What would that work out at, Mr. Bolam?

(*Mr. Bolam.*) That works out at 1° 5′.

5306. (*Chairman.*) I wanted to ask you something about the electric light; that is used a great deal in Her Majesty's ships?—The newer type of ship would use it.

5307. Have you had any practical experience of electric side lights?—No, I have not; I have seen them in other ships.

5308. I wanted to know what breadth of filament, and what candle-power is usually used?—I could not tell you; I have never beeen in a ship with electric bow-lights.

5309. You have not seen them fitted?—No: I have only seen them when we have been manœuvring.

5310. You have never looked at them carefully?—No.

5311. Do they work very well?—Fairly well?—We always use the precaution of keeping other lights ready; in many ships we keep them ready lighted to put in at once. My ship uses the old lights as usual.

5312. Do you know if any complaints are made about them?—I have heard of none, not a single complaint; they are getting on very well.

5313. The oil lights do not burn mineral oil?—Colza oil is used in Her Majesty's ships.

5314. Do you know at all the breadth of wick they use?—An inch and a quarter; a 4-inch wick is an inch and a quarter wide, and the height of the base of that at the top of the wick where the light is 6½ inches.

5315. I see Captain Phillips has been kind enough to send us specimens. I suppose those are the wicks (*produced and shown to the witness*)?—Yes.

5316. And he has kindly sent us a drawing showing the way they are placed. That is the way they are placed, I think (*handing the drawing to the witness*)?—Yes.

(*Mr. Bolam.*) It is placed so as to have the smallest possible transverse wick.

5317. (*Chairman.*) So that they do not really represent a wick an inch and a quarter wide, because they are put sideways?—That is so.

5318. Something about an inch or so?—Something about that.

5319. (*Rear-Admiral Andoe.*) Did you observe in the squadrons cruising that the electric light was too strong?—I have never cruised with the electric light.

5320. You have never noticed it in other ships?—No; the other day I saw a mail-boat going out, and I did not think it was too strong at all. I think it is a great advantage to see a light at a greater distance. It gives one more time, especially if it happens to be misty. There is only one thing I wish to mention—about the masthead lights—they carry them too high in misty weather.

5321. Do you mean the electric light or ordinary lights?—Both. You cannot see them above the lower masthead. You can see them to that height, but not above it.

5322. The regulation says that they should not be lower than the distance between the two lights?—Yes, they can go any height above the regulation height, and in misty weather they ought to lower them below the lower masthead.

5323. What do you think should be the distance?—The old distance, about the beam of the ship, but not under 20 feet.

5324. In misty weather they lower them down a bit?—Yes, they ought to; but in fine weather carry them up; you can then see the light looking just like a star rising, perhaps 8 or 9 miles off, and as you get nearer you gradually see the bow lights, but in misty weather you would not see the masthead light, if kept as high.

5325. It would be better that it should be lower down in misty weather?—Yes.

5326. You know the Board of Trade officials contend that screening 4° gives vessels meeting one another in opposite directions, a little on each other's bows, but on parallel courses, a better opportunity of porting and crossing one another at a safe distance; and the idea is that if there were fine screening one might possibly port, and the other might starboard. What is your opinion upon that point? Have you given that any consideration?—If they would port in the first case, surely they would port in the second. The only objection, I think, in the first case is too large a base. For instance, if I saw the three lights on my starboard bow, and I just saw the red at this 4° angle, I should have a much larger space to go across, and if I was going as we do now, 15 or 20 knots, with a long ship, I have a very good chance of getting into collision.

5327. Even though both are reported at the same moment?—Yes, and you may not see them quite at two miles, and you do not act at once; for instance, I take it your ship might travel on 200 or 300 yards before she would alter; you must always take that into consideration, and the speed of long ships.

5328. Then you think crossing the bows is objectionable?—Yes, for instance, if the 4° was reduced to 2° I should not touch my helm at all, I should go straight on, as I would not then see all three lights of the other vessel.

* *See* Appendix 15, No. 1.

5329. Then you can always give starboard helm, and give more room. If you thought you were going too close, you would naturally alter or keep more on the side you found yourself on, and give more room?—Yes.

5330. There is another thing in fine screening—does it not occur to you that the ship more clearly indicates any change in her course?—Yes, at once.

5331. And that is not the same with a larger angle of screening?—No, as you keep on longer, you go further out of your course necessarily.

5332. (*Captain Hallett.*) Did you ever serve in a flagship of a squadron?—No.

5333. You have served in big ships, I dare say, in a squadron?—Oh, yes.

5334. Have you ever in the line ahead lost sight of both lights astern of you?—Never.

5335. Have you been in close quarters?—Yes.

5336. And you have never found yourself in such a position that you could not see both or one of the lights?—I could see both lights always, except at about 60 yards. I have never been so close as that. It is the distance you test them in the dockyard before they are turned out ready for sea. The last thing you try is the lights, and you get into this dark lane about 60 yards from the stem of the ship. It depends upon where your lights are.

5337. That is from light to light?—No, if you have the crossing point at 200 yards, and then walk in they will disappear at about 60 yards.

5338. You are talking of when you are in position on the bridge probably—the distance of 60 yards that you speak of would be the distance from light to light?—The distance from where I am to the lights when I lose them is about 60 yards.

5339. But you have never found yourself actually in the dark lane?—Never. I have never lost sight of both lights crusing with the squadron.

5340. (*Captain Barker.*) In marking the position of these lights where they cross, do you walk towards the ship or from the ship, or can you observe them both ways?—Both ways. The thing is actually measured with a line, and there is a mark put down, and then when you get to 200 yards you see the lights shining fully bright, and as you walk in they get dimmer. As a rule we lose sight of them at about 60 yards distant.

5341. Do you find any difference in the dimming of the lights, or are they about the same?—They are fairly equal.

5342. (*Mr. Bolam.*) Have you any idea of what this angle of 1° really means. Is it an angle at which the light from the inside of the wick crosses the fore-and-aft line of the ship or from the middle, or the outside?—Right off the centre of the wick.

5343. Then you think this 1° really means from the middle of the wick?—Yes.

5344. (*Sir. E. Harland.*) I scarcely heard you distinctly with reference to the line of the lights crossing at 200 yards ahead of the light. Is that irrespective of what the distance might be between the red and green lights in a ship?—We make that the distance in crossing.

5345. And have you any instance of where the lights would be, say 70 or 75 feet apart?—Oh, we have all the bigger ships, the first-class battleships, such as the "Empress of India," and the "Royal Sovereign,"—all these new ships of 14,000 tons are of 75 feet beam. Then I take it their lights are 70 or 75 feet apart.

5346. And in these vessels with the lights 70 feet apart, would the lights be screened so that the direct light from each would cross at 200 yards ahead?—Certainly.

5347. Then what angle do you conceive that would give?—This angle is 3° 26′, but then that gives us a base of over two cables.

5348. Is it not more than 3° 26′?—No, 72 feet between the lights at 200 yards is 3° 26′;* reckoning from the centre of the lights, from light to light—3½° practically.

5349. (*Rear-Admiral Archer.*) Does that mean the two lights at this angle?—Is that the whole or half length?—That is the angle at which the light converges to the fore-and-aft line.

5350. To the fore-and-aft line?—Yes.

5351. (*Sir E. Harland.*) Assuming that *this* is the bow of the ship, and *that* is the position of the light *there*, and the position *here* in this triangle is 72 feet, then at 200 yards ahead they will cross?—Yes.

5352. And that will be the direct light from the wick?—Yes, not the reflection.

5353. If such be the rule in the navy with 72 feet between the lights, what would be the rule if there is only 36 feet between them?—At 36 feet they would cross at 1° 36′.

5354. Is that the practice still?—That is the practice. That is what we do with all ships, even the "Spider," which is only 12-feet beam; we took it at 150 yards.

5355. But you would not reduce it in vessels half that beam, 36 feet?—No.

5356. Are you aware that that practice in the Navy is very different to the practice in the Mercantile Marine?—I do not know the practice in the Mercantile Marine.

5357. (*Chairman.*) Is that from the centre of the wick?—Yes.

5358. (*Mr. Bolam.*) They call it the full light; that is the puzzle?—Yes, so it is. When we test our lights we always take a fine dark night, and the ship is placed in position, and the distances are all measured. We go out that distance, and then we walk in.

5359-60. (*Sir E. Harland.*) Then you have not perhaps followed the report in the papers of the views which have been taken by the Mercantile Marine with reference to the screening of side lights?—No, I have not seen them.

5361. Do you approve of this plan of the angle of screening varying with the beam of the ship?—I do. I think the base upon which we should all work should be the base of the triangle at the other end, the breadth over which the three light show at 2 miles, and I think a cable would be ample for this distance.

5362. What would your opinion be for practical purposes as to a uniform angle for screening, irrespective of the beam of the ship?—I do not quite understand your question.

5363. Would you prefer to adhere to the plan in the Navy, or to have one uniform angle irrespective of the beam of the ship?—I would not have a uniform angle; it would be impossible to give it in our ships, because we are obliged to put them in so many different positions.

5364. But could you not regulate that by the angle of the screens?—I do not quite follow you.

5365. Could you not make it anything you choose by putting a chock at the end of the screen?—I could not work upon that basis at all.

5366. Are you aware that that is the rule at the present time which is followed by the Board of Trade; a certain angle is determined upon, quite irrespective of the beam of the ship?—I do not know; we have never practised it. The orders are to screen so that the lights cross at from 200 to 150 yards.

5367. In approving of the practice of the Admiralty do you see that it pays no regard whatever to the width of the field. Here is a vessel, and at a certain angle the green light opens out on the port side and at the same angle the red light opens out on the starboard side. Are you aware that in a vessel of double the beam the field would be at once doubled?—Yes, quite so.

5368. Do you think that the width of the field should not be considered?—No, I would fix the width of the field at one cable and work from that.

5369. Are you aware that if you followed that out, you would then, practically speaking, have to screen your lights to a certain angle, almost irrespective of the beam of the ship?—I would have to do that. I do that every day. We have so many ships of different types.

5370. But your statement just now to us was that you preferred to adhere to the lights crossing each other at 200 yards ahead irrespective of the beam?—I do not prefer that; I think you misunderstood me; that is no preference of mine. We cross them according to the order.

5371-2. Then you say the rule is even in large ships in the Navy for the lights to cross at that fixed point?—Quite so.

* See Appendix IX, No. 2.

*Staff-Commander Edwards.*

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5373. And I understand you to say that that plan is adopted quite irrespective of the beam of the ship?—Except in small ships.

5374. Take the large ships irrespective of whether the beam of the ship is 40 or 70 feet?—Yes.

5375. If that be the test then would not that at once have the effect of rendering the breadth of this field at 2 miles totally different for different ships?—Yes.

5376. Depending entirely upon the distance apart?—Yes, we will take a ship with 36-feet beam, and another with 72, the 72-feet beam ship has double the base that of the 36-feet beam ship.

5377. Then do you prefer that that base should be uniform?—It should be uniform.

5378. Then if you prefer that, does it not necessarily follow that you must abandon this principle of 200 yards?—Certainly I should like that taken away. I do not want that; I want to take my base line of one cable at 2 miles distant as the standard, and work back to the ship.

5379. Then you do not approve of the present custom?—I do not; it makes the base too large altogether.

5380. Then with reference to wicks, do you think the Admiralty plan is the best way of placing them? Do you think it preferable to place those wicks at different angles, instead of, as is customary in the Mercantile Marine, placing one wick immediately behind the other one, parallel?—I never tested them; I could not say it was preferable. It may give a better light, or it may not; I am not prepared to say which way that is, but I take it that would be the result of the experience of somebody else.

5381. Is that the invariable custom?—Yes, that is the invariable custom.

5382. Do you make any difference between the intensity of the light applied to the green shade or the red shade?—They are exactly the same.

5383. And I think you observed no difference in the intensity of the lights?—It gradually disappears as we walk towards the bows.

5384. You would not consider the green light any weaker at 2 miles than the red light?—No, certainly not; it is perfectly discernible—the green from the red—there is no mistaking them one for the other.

5385. But would you lose the green sooner than the red; if the red was fairly bright at 3 miles distance, do you think the green would show as strongly?—No, I think the green in all cases would get dimmer before the red.

5386. Have you ever in the Admiralty adopted the practice of having a duplex wick for the green light and a single wick for the red?—No, they are exactly the same.

5387. All the wicks are the same size?—All the lamps are the same size. You can take the lights from the "Spider" and put them into any other ship of the navy.

5388. You have one standard power?—Yes.

5389. And that applies to all vessels?—Yes.

5390. Does that apply to the masthead light?—Yes, they are all the same. You can take the wick out of one lamp and put it into another.

5391. Are there many of your vessels lighted by the electric light?—Some of the newer ones are, but I could not tell you anything about them from practical experience, except that they seem very bright but not too bright. I think the brighter they are the better.

5392. Has it occurred to you in your nautical experience that the angle of screening should be finer or coarser than in practice it would appear to be in the Navy?—I would start from the base of one cable at 2 miles distant, which would make the screening finer. With the present screening in Her Majesty's ships it gives us a base over 2 cables, which is too much, I think.

5393. What is your opinion of screening perfectly parallel with the light, for the light strictly speaking not to cross the centre line at all?—I would rather have them cross a little. I would not have them simply show green on the starboard side and red on the other, and not see them cross at all.

5394. At what distance ahead would you propose that they should cross as against the 200 yards, if you had your own choice in the matter?—Well, you see I start my base of one cable about two miles distant, which I think a very fair one; if you did not see the lights at that distance, and you were steaming at 20 knots, and meeting end on, it would be almost hopeless.

5395. Supposing you saw it at 1 mile distance, what do you think about that?—Yes, I think that might possibly be sufficient. I should not like it less.

5396. (*Captain Hallett.*) You say you take a cable as your base, from what?—At 2 miles distant.

5397. (*Sir E. Harland.*) Then, in place of the lights crossing at 200 yards ahead, you would prefer them to cross really at 2,000 yards, which is a mile ahead?—Well, if you have a fixed crossing point I can have no fixed base at the other end (2 miles distant); it will vary with the distance the lights are apart; if you make me cross at 200 yards and those lights are 70 feet apart, you make my base over 2 cables, which I consider much too large.

5398. (*Mr. Bolam.*) The whole breadth is one cable?—Yes.

5399. (*Captain Hallett.*) Not a cable either side?—No, that is too much. We have half a cable on either side, that is quite enough, but I would reduce that if I could. My object would be that a touch of the helm should clear the ships, but if I have a broader field, I have a longer distance to run (*explaining with diagram*).

5400. That is to say, you wish to leave the field here a certain width, in which you may be free to see both lights of the approaching vessel?—Yes, at two miles' distance, to be one cable broad.

5401. And you limit that considerably compared to what the Admiralty do?—A half, or less than half.

5402. (*Rear-Admiral Andoe.*) Supposing you take the base at two miles as you say, the consequence would be that the screens of all ships not could be set at the same angle?—Oh, no.

5403. They would all have to be set at different angles?—Every one, varying with the distance between the lights.

5404. Therefore in merchant ships it would be almost impracticable to do it?—I take it you could have your 3-feet screens, and do as we do, alter the angle by putting fillets to cut the light off.

5405. But you could not do it by experiment in the docks—it would be impossible. It would all have to be theoretical?—Yes, we do it theoretically now; if you take the base at two miles to be one cable, the angle of convergence could be easily worked out, and would vary with the distance between the lights.

5406. I quite see the theory, but the difficulty in my mind is, that you would have to set the screens all at different angles?—There would be no difficulty. You could have a table. I want to leave the ship out of the question altogether.

5407. To bring that about the screens would have to be set in proportion to the distance between the lights?—Yes; then you can work it out. You can have different tables. If it was 12 feet it would be so much, and if it was 14 feet it would be so much, and if it was 30 feet it would be so much, and so on.

5408. (*Sir E. Harland.*) Then this plan just illustrates the objection you have?—Yes.

5409. At this distance from the approaching vessel, the field *here* varies considerably?—Yes, it is much too large.

5410. In one case it is much too large, and perhaps in this case you would say it is too small (*referring to the diagram*)?—Oh, no.

5411. Therefore your remark just now is in favour of very fine screening?—Yes, certainly; I start with a cable at two miles' distance—I think that is a very fair distance.

5412. (*Mr. Bolam.*) With regard to the cable as the width of the field, would you kindly say whether the amount of light that would satisfy you would be 1° 25′, supposing it is that from the middle of the wick?—Yes.

5413. Then it will be less than that from the inside?—Yes, we work always from the centre.

Staff-Commander GEORGE S. KEIGWIN called and examined.

*Staff-Commander G. S. Keigwin.*

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5414. (*Chairman.*) Would you tell me what your present occupation is?—I am attached to the Royal Naval Barracks at Devonport.

5415. What experience have you had at sea?—My last ship was the "Anson" in the Channel squadron. I was staff-commander of her.

5416. And you have had experience in other ships, I dare say?—In the "Orontes."

5417. They are both large vessels, I believe;—Yes, the "Anson" is much larger—she is a battle-ship.

5418. She is one of the first-class battle-ships?—Yes.

5419. We want to ask you about this question of screening the lights. As I understand the Admiralty decide the angle of the lights by seeing that they cross at a certain distance according to the breadth of the vessel's beam, varying from 200 to 150 yards?—Yes.

5420. I do not want to trouble you about all the details of that, because we have heard about it from one or two of the witnesses; but what is your view about fine screening and broad screening? You know that the Admiralty practice seems to be different from the practice in the merchant service under the new rule—I dare say you know the new rule of the Board of Trade, which prescribes 4° from the outside edge of the wick?—Yes.

5421. Have you formed any opinion as to whether that is unnecessarily coarse?—Well, I should think it was. I have found, so far as our own ships are concerned, that the lights seem to be very well screened. I know that a similar ship, the "Rodney," was often astern of the "Anson" in the line, and the instant she altered her course she shut the lights out.

5422. Are the "Rodney's" lights screened the same as yours?—Yes, they are all the same.

5423. Can you tell me approximately the breadth of beam of the "Anson"?—The ship is 68 feet broad, and I should think between the lights the distance is a good deal over 60 feet, probably about 64 feet.

5424. Do you know where her lights are?—They are all in the same position immediately under the fore bridge.

5425. Were they screened?—Screened with a board.

5426. And we understand that in those vessels they are screened so as to cross at 200 yards from the light?—Yes.

5427. You say you have had the "Rodney" following you in a line?—Yes.

5428. I suppose you never noticed any difficulty arising from a dark lane? You have never been so close as to lose sight of her lights altogether, have you?—No, I do not remember noticing it, because sometimes she came up too close they would give her yaw out of the line, when the off light would immediately disappear the other remaining in sight.

5429. If they did that they would not come right astern?—No.

5430. And there you found the lights did, as the vessel changed her course; show very quickly?—Yes.

5431. And have you formed any opinion as to whether or no you saw very much of both lights, or whether a very small alteration gave you sight of one or the other. I mean whether she seemed to be screened fine or coarse?—There was a slight dimness at first, then you would lose it, but it seemed to alter very quickly.

5432. Was that the electric light or an oil light?—The electric light.

5433. Do you find the electric light work well?—We never had any trouble with it the three years I was in her.

5434. It did not go out or do odd things of that kind?—No.

5435. I suppose you always keep the oil lights ready in case of emergency?—Yes.

5436. But you did not have to use them?—No.

5437. Did you notice the breadth of the filament of the electric light?—No, I did not.

5438. Or the number of filaments?—No.

5439. Nor perhaps the candle-power either*?—No.

5440–1. Of course the electric lights in the "Rodney," for instance, are very powerful?—Yes.

5442. The masthead light of the "Rodney," I suppose, is an electric light too?—Yes.

5443. Did you notice whether the masthead was so powerful as to dim the other lights at all?—No.

5444. Because we found the other day when we were experimenting that if you had a very powerful masthead light it did dim the side-lights?—Yes, it might sometimes. I have found at times that it is very difficult in passing merchant ships to pick out the green light, what with so many saloon lights and that in the neighbourhood; but I never noticed it with our ships.

5445. With regard to the question of fine or wide screening, is it your view that the screening should be as fine as may be, or that it should be somewhat broad?—I think myself the finer you can get it the better.

5446. You do not see any danger that is likely to arise if the lights are screened fine?—No, I do not.

5447. The suggestion made by persons in favour of broader screening is that if they are screened fine you may get a position in which, if the vessels are on exactly parallel courses, each slightly on the starboard bow of the other, if they were to keep their courses exactly, they would almost if not quite touch; it is suggested, therefore, that the screening should be broader, so that under those circumstances they would each port their helm and cross. Do you think that is a practical thing?—The position in which you place them then is very liable to cause danger; if you could depend upon both porting at once it might be done, but with these heavy ships going at a high rate of speed, if one ports and the other does not, I should think a collision would be inevitable.

5448. So that you would prefer them to keep their own courses on that side upon which they found themselves, and I suppose, if necessary, you would prefer a touch of starboard helm to keep clear?—I should not prefer a touch of the starboard helm.

5449. You would rather they kept their courses?—Yes, but I think all fineness in the steering should be discouraged as much as possible.

5450. You do not prefer that they should pass each other too close?—No.

5451. Supposing two vessels like *that* and each saw the other approaching like *that*, the lights not being exactly in the same bearing, something like a quarter of a point, do you say under those circumstances you would not recommend that each should give a slight touch of the starboard helm, or what would you recommend them to do [*describing*]?—I think the only safe thing if the ships are nearly ahead is to obey the existing rule.

5452. Not quite ahead?—Or very nearly. Of course, is it very difficult to say which way the other ship will go for the moment; it is a momentary thing. Of course, if you had a broad course you would have more room, but if you have a fine course you would not; then I think they should follow the existing rules.

5453. (*Rear-Admiral Andoe.*) Do I understand you to say you would not, although you were going to pass very close to each other, green light to green light, starboard your helm, or would you sooner run a risk of a very close shave?—I do not believe in a very close shave at all, but I do not think it right to allow the option of the starboard helm, that is to say, to lay down the law.

5453*a*. So as to make it imperative?—Yes.

5454. Supposing two ships very finely screened were approaching each other a quarter of a point on each other's starboard bow; you see one another's green light ahead, or nearly so. If you both continue your courses you must make a very close shave; you are not

* Staff-Commander Keigwin subsequently wrote to say that the lamps were of the ordinary incandescent type consisting of a pear-shaped filament with one loop at the upper end, and were of 16 to 20 candle-power.

*Staff-Commander G. S. Keigwin.*

1 Aug. 1895.

justified in crossing the bows unless you see the red as well as the green, are you?—Exactly.

5455. Therefore to keep clear of each other you would each give a touch of the starboard helm to increase it?—If only the green is showing I have been assuming in answering the previous questions that all three lights were in sight, and what I meant to say was that the helm should not be allowed to be put to starboard as long as all three lights are in sight. Consequently the finer the screening the more time and room there is for the ships to port and pass on their proper sides; when, however, the red light is shut out there can be no objection to starboarding, if necessary, to give more room.

5456. Green to green?—Yes, certainly, so long as you do not see the three lights.

5457. But directly you see the three lights the law is what?—To port your helm.

5458. Both of you?—Yes, to my mind that is where the safety lies.

5459. The Board of Trade's contention is that with the lights crossing at the 4° angle the two ships would see each other's green lights in good time so as to port their helms and go clear of each other by crossing each other's bows. What is your view of that?—Well, I cannot help thinking that if a ship sees the three lights she ought to pass on the port side of the other.

5460. Quite so, that is the law; but is it desirable that you should make the lights cross so much as to have a large base?—Oh no, certainly not, that is why I think the fine screening better.

5461. Do you consider the 4° angle is too coarse?—Too coarse.

5462. You think so?—Yes.

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## Wednesday, August 7, 1895.

*Mr. H. E. Deadman.*

7 Aug. 1895.

PRESENT:

THE RIGHT HON. SIR FRANCIS H. JEUNE IN THE CHAIR.

Rear-Admiral ANDOE.
Captain WILSON BARKER.
Mr. BOLAM.
Captain HALLETT.
Sir EDWARD HARLAND.
Mr. C. HIPWOOD, *Secretary.*

Mr. HENRY EDWARD DEADMAN called and examined.

5463. (*Chairman.*) You are connected with construction at the Admiralty, are you not?—Yes.

5464. Will you kindly tell me exactly what is the position you hold?—I am a Chief Constructor.

5465. Where?—At the Admiralty, in the Constructive Department; Assistant to the Director of Naval Construction.

5466. Where are you stationed?—At the Admiralty now.

5467. What are your duties so far as regards construction in respect to ships' lights. What have you to do with the construction of them?—In my present position I have no special duties except as regards examination of and reporting upon proposals for the position and mode of fitting of lights that may come from the dockyards or from the contract yards.

5468. Do you mean the position of lights in the vessels?—Yes.

5469. Does that include placing them in turrets, and so on, or is that simply as to the position of the lamps?—I am speaking now of side-lights; the position of lights on the ships.

5470. Does that include the placing them in the turret, or as to the construction of the turret, and so on?—You refer to what we call the lamp box. We have no such thing in the Navy as a turret or lighthouse. The lamps are fitted in boxes.

5471. Then, one thing you have to do with, at any rate, is the position of the lamps in the ship; that is to say, how far forward and aft they should be placed?—Yes.

5472. I suppose that has to be determined, has it not, by the nature of the ship?—That has to be determined by the nature of the ship, and the surrounding fittings.

5473. And, of course, you have to subordinate the position of the lamp to the position of the guns, and so on?—Just so.

5474. Now, generally, whereabouts in regard to amidships are lamps placed. Do you place them forward generally of amidships, or about amidships?—Not amidships, certainly, generally as near as possible abreast of the foremast, or the position where the masthead light is placed. That is one point we keep in view, so as to have all the lights as nearly as possible in the same athwartship plane. As a matter of fact, I should say, generally we put them rather forward of the foremast or position of masthead light.

5475. Are they carried at the extreme breadth of the ship, wherever they are placed?—Yes, they are carried at the extreme breadth of the ship, at the spot where they are placed, but not necessarily at the extreme beam of the ship.

5476. Have you anything to do with the construction of the lamps, or with the construction of the lamp boxes?—The lamp box, not of the lamp. There is a standard pattern Admiralty lamp, of course, which is used.

5477. You have to do with the lamp boxes?—I have to do with the lamp boxes.

5478. I do not quite understand, I am afraid, exactly what a lamp box is. What is the sort of thing that is used?—I have with me a copy of the Admiralty Instructions. They are very concise, accompanied by a sketch which shows the kind of thing which is referred to as the lamp box (*produced*). It is just simply a box suitably placed to contain a lamp.

5479. Does that apply even in the case of electric lights?—Yes.

5480. You only use vegetable oil, you do not use mineral oil?—No.

5481. But you do use electric lights?—Yes, in all ships which have electric light installation for lighting the ship; the bow lights are also lighted by electricity.

5482. So far as your experience goes, do you find the electric light works very well?—Yes, very well. We have no trouble whatever.

5483. Do you know the power of electric lights which is adopted?—16 candles.

5484. Not more than 16 candles?—No.

5485. (*Rear-Admiral Andoe.*) One lamp of 16 candles?—One lamp of 16 candles.

5486. (*Chairman.*) Is the mast-head light more powerful with the electric light, or how is that?—The mast-head light is also one lamp of 16 candle-power.

5487. Do you know, are the lamps generally with single filaments or two filaments?—The electric lamps?

5488. Yes?—Ours are single filaments. The ordinary Admiralty pattern 16 candle-power lamp has a single filament.

5489. That is a single one, is it not (*referring to a pattern produced*)?—That is a double filament; those used by Admiralty are single filament.

5490. I suppose oil lamps are always kept in reserve?—Yes, they are always kept in reserve where there is electric light installation. The lantern is fitted with both oil lamp and electric lamp.

5491. Of course, using vegetable oil, they are rather hard wicked?—Yes, they are.

5492. Now, as to screening these lights. We have been told the rule of the Admiralty is to regulate the screening by the distance ahead of the vessel at which the lights cross; is that within your province at all?—Yes.

5493. As we understand it, it is this, that in big vessels, they are made to cross at 200 yards ahead of the lamps; but for smaller vessels they are made to cross 150 yards ahead of the lamp?—Yes.

(*Mr. Bolam.*) Ahead of the stem?

5494. (*Chairman.*) Ahead of the stem?—Yes, those are the actual regulations.

5495. (*Chairman.*) "Fittings for bow lights are to be "so arranged that when the lamps are lighted they "should not be visible at all at more than three points "abaft the beam, to an observer at 200 yards distance "from the light. A screen, as shown on Plate 44, is "to be fitted so as to secure this.

"The screens ahead should be so fitted that an "observer approaching the ship from right ahead "would see the full rays from both lights up to a point "from 200 to 150 yards before the stem, between "which point and the ship the lights should appear "dim, gradually disappearing as the bow of the ship is "approached.

"The smaller distance of 150 yards is preferable for "ships with small beam, or ships with small transverse "distance between the lights, and the greater of "200 yards for ships with greater distance between the "lights.

"The lights should be tried in place to see if the "before-mentioned conditions are fulfilled, and if not "the necessary alteration to the fittings should be "made, A.S. 1357/89.

"The box for bow lights is to be constructed as "shown on Plate 44." I do not know what you consider a small transverse distance. At what sort of transverse distance do you make the change from 200 yards to 150?—No particular distance at all; that is a latitude which is allowed in all ships, but it is stated that the smaller distance is to be preferred for small vessels such as gunboats and vessels of that kind, and as you get to a battle-ship, for instance, that you should approach the greater distance, but there is no definite distance between those limits for any particular class of ships.

5496. I only want to know your practice, what sort of rule, if any, is laid down?—There is no rule; that latitude is given; it was considered by the Hydrographer of the Navy that it was no use laying down any more definite rule than that.

5497. If the distance was broad it was to be 200 yards, and if it was narrower it was to be 150 yards?—Well, it approaches those limits according to whether the ship is large or small, but anything between those limits is satisfactory; it is not so definite as the Board of Trade rule of 4°—the two rules may practically agree with a very broad ship; but, generally, according to the Admiralty rule, the lights would cross further from the bow than it would according to the Board of Trade rule.

5498. Have these rules been in force for a substantial time?—For a great number of years.

5499. And, as we have heard, the Admiralty did not make any change when the Board of Trade did?—Not upon the last Board of Trade Circular as to 4°. The Hydrographer thought it unnecessary to go into any more detail than is stated in those instructions.

5500. And, of course, the effect of that is that the Admiralty screening, speaking generally, is finer than the Board of Trade screening?—Yes.

5501. Have you any opinion yourself about that; do you think the fine screening is preferable or not?—I have no experience whatever as a navigator; it is entirely a navigator's question; but I agree with the Hydrographer, I do not see any utility in endeavouring to fix the lamps so that the rays must cross at a definite distance from the ship. A ship never runs on an exactly constant bearing, but is always in a constant state of slight yawing. Of course I am not a navigator, my own personal opinion is that it does not matter within reasonable limits.

5502. (*Rear-Admiral Andoe.*) You have had very great experience actually in the fittings of ships in dockyards, I think?—I have.

5503. Both as chief constructor and also in subordinate positions?—Yes.

5504. So that you have seen these screens fitted yourself under your own direction and observation?—Yes.

5505. And you have been present at the experiments which have taken place to test the position and the angles at which screens are placed, is that correct?—Quite correct.

5506. Of course you are quite aware that that angle materially differs according to the beam of the ship itself to which the light is screened?—Certainly.

5507. Therefore the broader the ship at a distance of two miles, we will say, for arguments sake, the greater distance a vessel will have to traverse to cross her bows in consequence of the coarser screening of the lights?—Yes.

5508. Have you ever had it brought officially to your notice that this material variation of the angle in different ships is considered objectionable by officers conducting these experiments?—I am not aware that we have had any complaints from commanding officers of the Royal Navy ships upon the subject.

5509. I mean officers connected with the dockyard—have they called special attention to the fact?—No, they have accepted the Admiralty instructions as satisfactory.

5510. Of course, the desirability of their crossing at larger or smaller angles is purely a seaman's question?—Quite.

5511. (*Captain Hughes-Hallett.*) Is there one standard pattern of Admiralty lamp throughout the service?—There is for ships; there is another pattern for very small vessels.

5512. The lamp, not the box?—The bow lanterns.

5513. The actual thing?—Yes, one standard pattern.

5514. And your boxes are, therefore, made upon a standard pattern?—They are made to receive the standard lantern.

5515. And they take any lamp that is drawn from store?—Yes, undoubtedly.

5516. After you have fixed the boxes, how do you regulate them to get an angle of crossing. If, upon experiments, the lights do not cross exactly at the 200 yards, how do you alter it?—The arrangements would

*Mr. H. E. Deadman.*
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be worked out upon paper as nearly as possible, and if there was any alteration required on trial it could be done in several ways, either by altering the fore-end of the screen or by putting a strip on.

5517. You do not put a chock, as they call it, like *this* (*referring to the plan*)?—Yes, we have done that. We have put on a small chock, but generally our screen is brought into the edge of the lens to begin with, further outboard than is shown there.

5518. (*Sir E. Harland.*) Then that necessitates a less chock here?—Yes.

5519. Meaning, perhaps, a very flat piece?—Yes. It is not often we have to alter to any great extent.

5520. (*Captain Hughes-Hallett.*) Then you set your screen, or the —— side of the box, whatever corresponds to that screen, to a calculated angle, do you, or with a line of the keel?—To a calculated angle.

5521. You set that from that angle at once?—Yes.

5522. You do not put the line of the keel and then a chock, or anything of that sort?—No.

5523. Then the actual thing is a structure that cannot alter; it is part and parcel of the structure of the ship itself, built into the ship?—Not always, it depends upon the class of ship, it may mean simply a box with a screen in front, secured in position on stantions; in larger ships we generally try to include it in the structure of the ship.

5524. So that there is no chance for any variation?—No, we look out for that. It can only be in the small class of vessels like torpedo boats that this liability would occur.

5525. Is there any minimum distance between the lights?—Athwartships you mean?

5526. Yes, between the lights in the athwartship line?—There is no Admiralty rule.

5527. As to the minimum distance?—No. On some of the torpedo-boat destroyers we have them fixed on the funnel as close together as 7 feet.

5528. They are actually together, back to back, in torpedo boats?—Yes, in small steam launches, but in ships it is generally considered that at the point where they are placed there is always sufficient distance between.

5529. But there is no regulation as to a minimum distance?—There is no regulation as to a minimum distance.

5530. (*Mr. Bolam.*) One of the staff commanders who gave evidence here put in a list of vessels, among them was the "Agamemnon," which carried a lamp beam of only 23 feet 7 inches. In that case, he said, the distance ahead at which the lights should cross would also be 200 yards. Does not that seem to violate the Admiralty rule?—They are very peculiar ships, with very narrow super-structures forward.

5531. He said, in that case, although the light beam was very small, still the light was made to cross at 200 yards. Is not that rather a violation of the Admiralty rule, where the ships have the lamps at a small transverse distance?—No, because the limits allowed in any ship are 200 yards to 150 yards; there is nothing definite between these limits.

5532 Because the angle at which that works out is only 1° 5′?—Yes. Of course, that would be very fine.

5533. You were present at experiments where the angles have been taken, and so on, in connexion with the screening of the lights?—Yes.

5534. Will you state what you do precisely?—We simply moor the ship in such a position that we can get measurements on shore, and the fore-and-aft line is produced, and after dark the lamps are lighted and actual observations are made by the reserve and dock-yard officers of the actual distance in front of the stem at which the full light is lost and at which it begins to fade.

5535. How do you determine the point at which it begins to fade; is it just a rough estimate?—It is a visual estimate unaided by photometric instruments.

5536. Have you any idea how much of the whole cross section of the light that would amount to seeing; would it be virtually the whole of the wick, or half of it, or what?—No. We make no measurements of that kind. It is difficult to fix a very definite point for crossing, that is why that latitude is given, anywhere between 150 yards and 200 yards. It would be very difficult to say that exactly at 200 yards your light was just beginning to fade. You would fix it within certain limits. You could tell between 150 or 200 yards.

5537. I should like to know definitely what these angles, which I have worked out from the Admiralty practice, amount to; whether it means these angles are from the inside of the wick, or the middle of the wick, or the outside of the wick? One witness thought it practically meant from the centre of the wick?—I could not tell you that. We do not use the angles, and therefore that has not come under my observation. We simply observe the point at which the light loses its full power and begins to dim.

5538. You stand at a spot, do you, observing the lights?—We gradually approach the ship. We get away beyond 200 yards, and we walk up until we get to 200 yards, and at that distance we expect to see both lights full. If the light begins to fade before we get to the 200 yards then the screen wants altering.

5539. I should rather have thought you would have stood at the 200 yards and signalled to the man looking after the screens, and allowed him to work the screens in and out till the lights showed, or put chocks on of different sizes?—Yes, that would be done if we found that we wanted chocks. For instance, if we got within 150 yards and found the lamp was still showing, and we could see either light, then we should put on a small piece of chock and try again till we got the chock of the correct thickness.

5540. (*Sir E. Harland.*) You referred to the side lights being placed very much with regard to the position of the mast?—Yes.

5541. But in giving that answer, does it occur to you that the position of masts in ships now-a-days is a very unknown position, that is to say, they vary so much, so many ships having only one mast, and that being abaft amidships in some cases?—Oh yes, that would be a special case, but in that case we should put up a mast for the light alone, which I should call a foremast in that case.

5542. What sort of a mast?—An ordinary pole mast.

5543. What sort of mast, do you mean that for the masthead light?—Yes, of course, I was referring at first to an ordinary rigged ship. Where you come to a ship with only one military mast that will not apply; a pole would in this case be required to carry the mast-head light, and then we should try and fit the side-lights abreast that pole if possible.

5544. Then are some such poles fitted to some of our large line of battle ships?—Yes, they are fitted to the battle ships of the "Admiral" class.

5545. Then how is it fixed; has it rigging to it and shrouds?—Yes; it is stayed as necessary to support it.

5546. Then are the side lights in that case placed opposite that masthead pole?—Yes, as nearly as possible; we cannot always do it, other conditions come in.

5547. Are they placed there with the object of getting them away from the position of some of the guns at the side, upon the principle that the guns could not be placed at the side exactly where the rigging of that pole mast is secured?—No, the principal object is to get them in the same athwartship plane as the side lights.

5548. Then are you aware of the commanders of these vessels preferring to have their side lights immediately below the masthead light so far as possible?—I have always understood that that is desirable.

5549. Then you have not heard them express any opinion that it would be better to have the side lights abaft the masthead light?—No, I have not.

5550. To enable them to judge at a distance in what direction a ship was sailing, for instance?—No, I have not heard that.

5551. Then, in that case, the side lights in your opinion are placed more with the object of having them below the masthead light?—Just so.

5552. And then the masthead light is placed with what object; why is the masthead light placed at any

particular spot; is it placed in view of any deck-fittings or guns?—That would be the case.

5553. So that it would in no way interfere with the freedom of action of the guns?—Just so.

5554. So that in that view the lights became subservient, as far as position is concerned, to the position of the guns in the vessel?—They must in a man-of-war to a certain extent, but in a design all these points are considered together and each given its due consideration and weight.

5555. Then are these lights accessible from the bulwarks of the vessel at all, for trimming and placing in position?—Yes.

5556. In that case, then, they are placed very similarly, for practical purposes, to some of the merchant ships, and they are secured in what are called lighthouses?—Yes, in cases where we have a closed-in forecastle they are very often fitted so as to be get-at-able inside; where they are placed on the top of the forecastle in some ships we have arranged for them to be put up from the bottom.

5557. So that, practically speaking, they are more or less in something like what are called light boxes?—Quite so, except there is no separate lens in the box, the lens of the lamp is the only lens; there is simply a hole cut out in the box for the lens.

5558. That is so, that the only glass exposed to either the light, or the sea, is the simple lens of the lantern itself?—Yes.

5559. Then, with reference to these lights, you say they are generally 16-candle power. Does that apply to the red and green lights?—It applies to both.

5560. You are not aware of any more intense light being given to the green light?—I am not.

5561. You also observed that there was a degree of latitude given to somebody as to whether the rays should cross at 150 yards or 200 yards ahead. To whose discretion is that left? Is it left to the discretion of the commander of the vessel for the time being, or the captain, or the admiral?—When the test is made by the reserve and dockyard officers before the ship is placed in the fleet reserve, if those conditions are fulfilled, that is, if the light begins to grow dim anywhere between the 200 and the 150 yards, that would be considered satisfactory.

5562. Then, in that case, you would at once admit that the distance between the lights being probably very varied, in those various ships, that that would leave a very considerable difference in the angle?—Yes, undoubtedly.

5563. Then, following that up, you referred to some side lights being carried on each side of the funnel in some of the torpedo catchers?—Yes.

5564. And even in one instance where they were carried back to back. At what distance would this angle be arranged for the lights to cross—would it be the same, 150 yards ahead?—I am not aware that there is any rule with regard to that, only the simple placing them back to back is accepted.

5565. But would you not be able to determine beforehand at what distance the lights even in that case should be made to cross, or in other words, would not that at once necessitate the screens being very much finer, as we have called it?—Yes. I do not think that the same importance is attached to the fitting of very small boats, as it would be in larger ships; certainly, there are no definite regulations to my knowledge; no special trials are made.

5566. Not by night in dock?—Not by night.

5567. Then, so far as you are aware, they possibly would arrange that they should cross at 150 yards ahead the same as other small vessels?—Yes, it is possible; there is no definite rule laid down with regard to that. I do not think it is considered to be a matter of importance whether they cross at once or 100 yards ahead in those small vessels where lamps are obliged to be placed so close together.

5568. Are you aware, where oil is used, if it is American or Colza oil that is used?—Colza oil is used.

5569. Would that be in view of American oil not being permitted in general use on board ships in case of fire?—That is the reason.

Mr. Thomas David Taylor called and examined.



5570. (*Chairman.*) I think you are a surveyor under the Board of Trade at Greenock?—Yes.

5571. I think you have been good enough to make out a table* showing the various percentages of vessels which had their lights screened one way or the other in 1893?—Yes.

5572. That would represent their screening before the new rule was in force?—Yes.

5573. First of all, how many vessels did you take the screening of?—Over 100.

5574. And upon what principle, if any, were they selected?—They were not selected at all. I just took them as they came into the port, indiscriminately.

5575. You just took the first 100 that came into the port?—The first 100 that came into the port after the order came out about the end of November, 1892.

5576. So that the first 100 that came into the port you took particulars of, in order to show actually what screening at that time they adopted?—No, it was not for that purpose I took it. I took it in order to see how the screens were arranged for the purpose of putting them to the 4° angle.

5577. So that you found out what their screening was?—I found out what they were before I could adjust them.

5578. This table (*produced*) as I understand, shows the results?—Yes, it practically shows the results.

5579. But you took notes, I think, from which this table was made up, did you not?—Yes, it is all *here* in *this* list which is handed in to you. I think it gives the vessels.

5580. Did you ascertain, before making out that list, that the screening had not previously been dealt with by any other surveyor?—Yes, I made a point of that in every case.

5581. And so you were pretty sure that the screenings represented upon that were the screenings actually in force before the new rule came into operation?—That is so.

5582. I think, further, you did ask, did you not, of the master or officer in charge whether, in his judgment, the side lights in fact crossed?—Yes.

5583. What were the answers you got?—With the exception of about four or five young officers, they were all under the impression that the lights showed in a line straight ahead of the ship, that is, parallel with the centre line of the vessel. But about five or six of the young officers that had just been through the schools were aware of the fact that the lights converged, but they were not aware how much.

5584. Those are the actual vessels, are they?—Those are the actual vessels.

5585. I see there are a certain number of sailing vessels?—And some steam; all the sizes are given.

5586. Now, may I take the first steamer as an illustration, the "Clymene." She is 1,463 tons gross and 942 tons net. You surveyed her on the 18th January, and there you found the convergence of the side lights was 3°. Now, is that measuring from the outside of the wick?—Yes.

5587. Then, I do not quite understand this, I am afraid. You have got 3° and 3° as the convergence of the side lights, and then you have another figure of convergence when the screens are parallel?—Yes, that is a case where the screens are not actually parallel to the longitudinal centre line of the vessel. You see the screens were supposed to be parallel. They may have got out of their places, so, of course, that gives the actual convergence of the lights, and this gives the convergence supposing the screens were placed parallel as they were supposed to have been.

* *See* Appendix, No. 16.

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5588. I see this gives, as indeed your table shows, a very great divergence indeed; in fact, a great many varieties; for instance, I see the highest goes up to 9°. Only one of the vessels goes up to that. Which was that? I wonder if you could find me that vessel?—There is one here, the "Enterprise," of Dublin. She is only a small schooner.

5589. She is only 39 tons net, but she is a sailer, and the actual convergence of the side lights is from 8° to 9°, and when the screens were placed parallel, 9° and 10°?—Yes.

5590. The only thing I should rather like to ascertain is this; this statement does not show, of course it can easily be worked out from that—?—I have given the percentage at the end if you look.

5591. But what I wanted to ascertain was, whether or no the larger vessels were generally the finer screened ones, or whether it is the smaller vessels. I asked you for the very largest in order to ascertain whether it was the smaller vessels. That turns out to be a very small vessel. Is it generally the case that the higher degrees of screening are to be found in quite the smaller vessels, and the lower degrees of screening are to be found in the large vessels?—No, I think you will find it is very much mixed between the large and the small, if you look over the list and compare it with the tonnage.

5592. I was tempted to ask the question because just the first few vessels would seem to point in that sort of direction. For instance, here is the "Bostonian" which is the first very large vessel. She is a vessel of 4,668 tons gross and 3,030 tons net. She is screened actually to 1¼° and 1½°, and when the screens are parallel it is 1¼ and 1½, so that her screens are in the right position?—Yes.

5593. So there she was screened very fine. Now, here is the "St. Enoch," she is almost as big. She is 4,298 tons gross, and 2,746 tons net. She is screened 5° and 4¾°. Again, her screens being in the right position. Here is a vessel of 3,318 tons gross and 2,136 tons net, the "Parkmore." She is screened to 3½° and 3½°. Now, when I get down to the little ones—here is one of 165 tons, the "Herbert." She is screened 7½° and 6°, so that it looks a little, of course I am only taking it very roughly, as if the big vessels were screened rather more finely, and it is the small vessels that bring up these very great figures?—Yes, the larger vessels were really screened very finely in a few instances. There is no doubt about that.

5594. Of course there are some large ones here. Here is one of 5,000 tons, where the screening is exactly 4°; and here is one of 4,500 tons, where the screening is 5½°?—No, 4½° in one and 5¼° in another.

5595. So the screen was evidently out of place?—The screen was evidently out of place.

5596. (*Rear-Admiral Andoe.*) I understood the Chairman to say those reports were of mixed steamers and sailing vessels?—Yes.

5597. Did you find the sailing ships were coarser screened, as a rule, than the steamers, speaking generally?—Yes, I think I did.

5598. And in most cases, I think I understood you to say, where you found fine screening it was in the case of large steamers?—Yes, that is so.

5599. (*Chairman.*) I think a glance will show that; wherever you see a large steamer you will generally find fine screening, and with the small vessels you will generally find coarser screening?—Yes. The steamers in one or two of the large companies have their lights screened very finely.

5600. (*Rear-Admiral Andoe.*) Do they seem to prefer it?—Of course I cannot tell, I suppose the superintendent had looked particularly to them in those cases.

5601. (*Captain Hallett.*) Do you have anything to do with the placing of the masthead light—the supervision of placing the masthead light at all—the white light?—Oh yes, I have got to see to all the lights.

5602. To see that it is not too low down?—Yes.

5603. Do you have any limit with regard to the height above the side lights?—Yes.

5604. Do you allow them to place it as high as they like?—Oh no, we seldom allow it to be any higher than a height equal to the beam of the ship, that is providing it is not under 20 feet.

5605. That is the height up?—Yes.

5606. But if they chose to put it 40 feet?—Well, if the beam of the ship was 40 feet, of course we would allow them to place it at that height.

5607. Then it is always placed at a height corresponding with the beam of the ship, is that what I understand?—Well, it is never supposed to be under that, but of course if the beam of the ship is very small—supposing it is only 15 or 18 feet—then the limit is to be 20 feet.

5608. Then where do you measure that from, above the side lights?—From the deck of the ship.

5609. If you measure that from the deck of the ship, and that vessel is carrying her side lights upon a very high bridge, you would have them exceedingly close?—Well you get them much closer, of course; there would be no doubt about that.

5610. The distance of the masthead light above them is limited, I think, according to the law, is it not?—Yes, and by the height of the fore lower mast.

5611. I wanted to ascertain whether anything was done in that way, because a complaint has reached my ears of the extreme height at which some of those fellows carry their side lights?—The general understanding amongst the surveyors is to fix the white light the height up that the ship is broad.

5612. Above the coloured lights, do you mean?—Yes, if the beam is 40 feet, to set the white light that height up.

5613. Above the coloured lights?—Well it is generally taken from the deck.

5614. (*Mr. Bolam.*) The words in the rule are "above the hull," is that how you interpret it?—Yes, "above the hull," it is taken from the deck of the ship.

5615. (*Captain Hallett.*) You have no instructions?—I do not think there are any specific instructions.

5616. (*Mr. Bolam.*) How long have you noticed the screens of the Clyde vessels to be; by screens I do not mean the whole length of the screen, but just the distance from the front of the lens to the chock?—Well, they vary from about 36 to 64 inches.

5617. (*Chairman.*) They are all given here. When you say the length of the screen, you mean from where to where?—From the wick *in* the lamp to the cutting point at the end of the screen.

5618. (*Mr. Bolam.*) Is that the chock?—Yes, the after edge of the chock.

5619. That is, wick to chock—there is no doubt about that?—No, there is no doubt.

5620. What is the largest angle you ever screened lights to, yourself, in your own practice?—Well, as a matter of fact, I have never really tried the angles, because we used to screen them before the present rule came into force, so as to keep the screen parallel to the centre line of the ship, and then the inner edge of the lens and the outer edge of the chock are parallel to the screen.

5621. So that yourself and your brother surveyors may really be responsible for these large angles?—Well, I do not see that exactly, because the lamps are made by makers all over the country, and they vary very considerably. There is no doubt about that. In fact, I have got one ship where the wick was an inch further out in one lamp than in another; consequently it makes a difference of nearly 2° in the angle.

5622. At any rate, in the large companies, where the screening is attended to, and the safety of navigation is specially attended to by the superintendent, your experience in the Clyde is that the angle was distinctly small?—Yes, in one or two cases; the table will show that.

5623. (*Sir E. Harland.*) As the apparent result of looking over your list of screening shows that the larger ships were screened to a finer angle, do you think that that has arisen from the larger ships having longer screens?—Oh, no, not at all; some of the larger ships have only got 36-inch screens, and some of the medium sized ships—a medium sized ship I have there, for instance, is 64 inches—she is 1,800 tons.

5624. Then, prior to 1892, was there no general instruction and no uniformity of screening amongst the Board of Trade surveyors as to either the angles or the length of the screens?—Yes, there was an instruction to this effect, that, where the lights are placed amidships or far aft, the surveyor was to take

care that the lights did not converge too near the stem of the vessel.

5625. But there was no instruction or recommendation as to the length of screening?—No, nothing particularly specified, but it states that in such cases the screen ought to be increased in length so as to reduce the angle.

5626. And was that before the idea occurred to them that putting a chock on them would ensure the same purpose?—Oh, no, the question of chock was gone into.

5627. But would it not have the same effect?—Of course it would, but you see there was no specific angle fixed, and consequently the surveyors had very much to follow out their own judgment.

5628. Then, do you really mean this, that the surveyors were bound to see that there was a pair of side lights in the ship, but as to the length of screen, or as to the angle they should be screened at, that was a matter very much left to the caprice or choice of the captain or marine superintendent of the company?—Well, that I cannot say; it is not supposed to be left to the captain or to the marine superintendent or anybody else; it is supposed to be a question for the surveyor to fix, and he is supposed to have a specific rule to fix it by.

5629. Was there a specific rule before 1892?—Yes.

5630. Then how is it, if that is so, that the surveyors at various ports seemed to have neglected that specific rule?—I do not know about neglecting it, but the varieties in the angles of convergence in ships' side lights depend very much upon the lamps and the rule itself.

5631. (*Chairman.*) In these vessels, exhibiting these great varieties, did you find the chock was in the line with the inner edge of the lens?—Yes, as a rule.

5632. So that these varieties are attributable really to the difference, mainly, in the lights used?—Yes, in the lamps used and in the position of the wicks in the lamps.

5633. (*Sir E. Harland.*) Then there was no attempt on the part of the various local surveyors to induce the lamp manufacturers to go by one uniform distance from the inner edge of the lamp to the centre of the wick?—No, I am not aware that there was; of course, according to the rules, the wick was supposed to be placed in the centre of the lens, but, as a matter of fact, you do not get them that way, as a rule they may be a half or three-quarters of an inch, either further in or further out, than they ought to be. Of course we cannot condemn the lamps for a thing of that sort.

5634. But you are not aware of there being any fixed position for the distance of the inner edge of the wick from the face of the lantern?—No, it really varies from about 4½ to 6 inches from inner side.

5635. Lamps, perhaps, in the same ship?—No, not in the same ship, in different ships.

5636. So that the screening which you superintended for a certain angle in the ship, with a certain set of lights, it was possible there that the owners might purchase another set of lights soon afterwards, and ship those lights with a difference of an inch, or an inch and a half, as to the position of the wick?—That is so.

5637. And so alter the angle tremendously?—Yes, I know one case—I surveyed the vessel—and I found they had lost one of their original set of side lights, and they had picked up an odd one somewhere, and the wick in the odd one was about an inch further out than in the original one.

5638. In view of that as your experience, and in view of its being desirable to have some uniform angle determined, whatever it may be, would you advocate that there should be some standard distance determined upon as to the distance of the wick from, say the inner face of the lantern, so as to enable any duplicate lanterns in the ship, when shipped in that receptacle, to be certain to show all the light at a proper angle?—Oh, yes, it would be very desirable, no doubt.

5639. Are you aware of any practical difficulty in that?—No. I am not aware of any practical difficulty.

5640. Do you suppose that a lamp-maker would object, or cause any trouble, upon the score of extra expense, if he were required to make his lamps, in future, with the wick a certain distance from the inner face of the lantern?—No. I do not see that there could be any possible objection to it myself. In fact, it would be a very desirable thing, and it would save a deal of trouble in many ways.

5641. Here, for instance, is a starboard lamp. Assuming that one or two, perhaps three, different sized lanterns, standard size, that is the largest ones for the largest ships, and the smallest size, number three, say, for the smallest ships; do you see any objection to the distance from the centre or edge of the wick being, in such cases, a fixed distance from the inner face of the lantern, so that when it is shipped into its box, or whatever the name of the receptacle may be, that it will ensure that whatever one of these particular sized lamps might be, the angle of screening would always be certain to be the same?—I see no objection whatever. It would simply mean that the distance between the inner edge of the lens here and the lamp would require to be varied in large and small lamps; but with that exception I do not see that there need be any difference.

5642. But why do you mention the edge of the lens, because it in no wise gives out any light?—No, but you would not get the convergence in larger lamps; supposing you had the side of the lamp away here, and you brought the wick in to a uniform distance, you might not have the convergence necessary. That is the only point.

5643. But assuming it, for simplicity's sake, in no case should the inner edge of the lens be beyond the outside of the inner edge of the wick?—No, I do not see it.

5644. Are you aware in comparing lamps that the lens really has nothing to do with the direction of the light leaving the wick and striking the chock?—It is not supposed to be, but I have found lamps made where part of the lamp really covered the wick altogether, when looking straight ahead of it, in certain makes of lamps.

5645. We have not found a single case of that sort.

5646. (*Rear-Admiral Andoe.*) In the commoner lamp, I suppose?—Not in that make; in one with a small cylindrical lamp that goes inside.

5647. (*Sir E. Harland.*) With reference to the height of the masthead light, the instruction being you say not more, and certainly not higher than the beam of the ship, and that the surveyors would object if it was unusually high, upon what principle would you object?—Well, there is no particular instruction upon that. It has been an understood rule that such was the case.

5648. You also state that the height of the masthead light should not be less than the breadth of the beam of the ship above the deck?—No, I said that they should never be less than 20 feet; and where the beam of the ship was, say, 40 feet, they ought not to be lower than 40 feet.

5649. And you are not aware of the principle upon which that rule was determined?—Well, I suppose the principle that it was based upon was the principle that the white light and the red and green lights ought to form a certain angle—ought really to form an equilateral triangle—that is the object of it.

5650. That is when you are stem on?—Well, stem on principally.

5651. Then, have you any instruction, or do you give any advice in any way as to whether the side lights should be abaft the masthead light or before it?—No, we take no action at all about it.

5652. (*Chairman.*) There is one thing I wanted to ask you. I see the length of the screens vary very much indeed; what was your practice before the new rules as to the length of screen, how far did you control its length?—Well, I allowed them to have the length of screen 36 inches from the outside of the lamp, that would make it about 42 inches from centre of wick.

5653. Because some screens I see here go up to as much as 64 inches. How do you account for that? Do you think that was because they escaped the observation of the Board of Trade surveyors, or that the Board of Trade surveyors at some ports did not care really about the length of the screen?—Well, I really cannot say what to attribute it to exactly, because no doubt there is a very great difference in the length of the screens; but, of course, according to the rule, which was in existence before the present rule came into force, the surveyors were allowed to increase the length of the

*Mr. T. D. Taylor.*

7 Aug. 1895.

screen according to the distance the screen was abaft the stem of the vessel, so as not to allow the lights to converge too close to the stem, and it is possible upon that account that the difference comes in.

5654. Because it seems a little odd to find this great variety in the length of the screens if there was any uniform rule practically in force with regard to these screens. I suppose the truth is that it was not able to be strictly observed?—No, there was not particularly strict uniformity in it.

5655. (*Sir E. Harland.*) Did you check the screening of any of the lights carried in what I call lighthouses?—Oh, yes.

5656. And did you find them pretty accurate, or did they vary much from the usual screening in other ships, in view of their being a comparatively new structure?—No. I found them very accurate as a rule.

5657. And did you find any difficulty in checking them or taking your measurements?—Well, of course it is more complicated to fix angles where you have got light towers, but still it can be done very readily by anyone who has any experience in laying off and sighting; of course where the whole thing comes in, in my opinion, is that the chocks have been fixed to the screens upon the supposition that the screens were parallel to the centre line of the vessel, when they really were not, because it is very difficult in some instances to know whether they are or not, and the only way in which you can check the angle accurately is to project the inner ray of light about 50 or 100 feet forward, or on to a forecastle. Then by setting up sighting battens at that point where the inner rays should cross; the outer edge of the wick and the chock should be in a straight line with the battens, if not, the chock should be made larger or smaller as may be found necessary.

5658. But you have found much greater difficulty in checking those angles in lights carried in lighthouses than with open screening?—Yes, of course it is more complicated, but it can be done with the greatest accuracy by anyone who goes into those matters carefully.

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# APPENDIX No. 1.



*Papers handed in by Mr. Howell.*

No. 1.—Extracts from the Admiralty Regulations of 1848-58.

A.—Diagrams Issued with an Admiralty Paper of 1847.

*See* Questions 10–13.

## LIGHTS FOR STEAMERS.

When under Weigh.

A Bright White Light on the Foremast Head.
A Green Light on the Starboard Bow.
A Red Light on the Port Bow, to be fitted with inboard *Screens*.

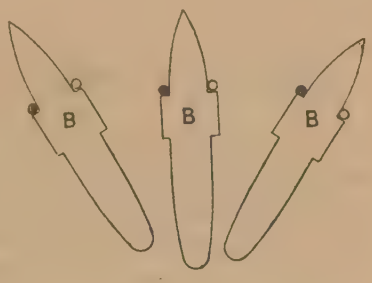
When at Anchor.

A Common Bright Light (Steamers and all other Vessels).

*The following Diagrams are intended to illustrate the working of the above Plan.*

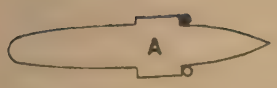
### 1st Situation.

In this situation the Steamer A will only see the *red light* of the Vessel B, in whichsoever of the three positions the latter may happen to be, because the *green* light will be hid from view. A will be assured that the *larboard* side of B is towards him, and that the latter is therefore crossing the bows of A in *some direction to port*. A will therefore (if so close as to fear collision) *port* his helm with confidence, and pass clear. On the other hand, the Vessel B, in either of the three positions, will see the *red*, *green*, and *mast-head* lights of A appear in a triangular form, by which the former will know that a Steamer is approaching *directly* towards him:—B will act accordingly.



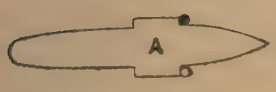

It is scarcely necessary to remark that the *mast-head light* will always be visible in every situation till abaft the beam.

### 2nd Situation.




Here A will see B's *green* light only, which will clearly indicate to the former that B is crossing to starboard. Again A's *three* lights being visible to B, will apprize the latter that a Steamer is steering *directly* towards him.

### 3rd Situation.



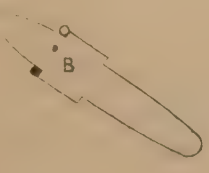

A and B will see each other's *red* light only. The screens preventing the *green* lights being seen. Both vessels are evidently passing to *port*.

### 4th Situation.

Here a *green* light only will be visible to each: the screens preventing the *red* lights being seen. They are therefore passing to *starboard*.

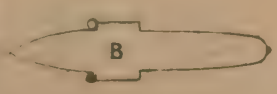
### 5th Situation.

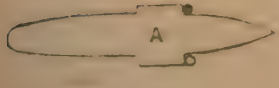
This is a situation requiring caution:—the *red* light in view to A, and *green* to B, will inform both that they are approaching each other in an oblique direction. A should put his helm to port, according to the standing rule mentioned in the next situation.



### 6th Situation.

Here the two coloured lights, visible to each, will indicate their *direct* approach towards each other. In this situation it ought to be a *Standing Rule* that both should put their helms to *port*. This rule is already pretty generally adopted; but it would add to safety if it were made *imperative*: for it is evident, that without some rule of this kind, well understood and practised, it will be impossible to guard at all times against accidents in the situation of the two Vessels here given.



App. 1, Nos. 1 and 2.

B.—Extract from the Admiralty Rules of 1848, published in the London Gazette of July 11, 1848.

1. The masthead light to be visible at a distance of at least five miles in a clear dark night, and the lantern to be so constructed as to show a uniform and unbroken light over an arc of the horizon of twenty points of the compass, viz. from right ahead to two points abaft the beam on each side of the ship.

2. The coloured side lights to be visible at a distance of at least two miles in a clear dark night, and the lanterns to be so constructed as to show a uniform and unbroken light over an arc of the horizon of ten points of the compass, viz., from right ahead to two points abaft the beam on their respective sides.

3. The side lights to be moreover fitted with inboard screens, of at least three feet long, to prevent them from being seen across the bow. The screens to be placed in a fore-and-aft line with the inner edge of the side lights.

C.—Extract from the Admiralty Rules of 1852, published in the London Gazette of May 7, 1852.*

1. The masthead light is to be visible at a distance of at least five miles in a dark night, with a clear atmosphere, and the lantern is to be so constructed as to show a uniform and unbroken light over an arc of the horizon of twenty points of the compass, being ten points on each side of the ship, viz., from right ahead to two points abaft the beam on either side.

2. The green light on the starboard side is to be visible at a distance of at least two miles in a dark night with a clear atmosphere, and the lantern is to be so constructed as to show a uniform and unbroken light over an arc of the horizon of ten points of the compass, viz., from right ahead to two points abaft the beam on the starboard side.

3. The red light on the port side is likewise to be fitted so as to throw its light the same distance on that side.

4. The side lights are moreover to be fitted with screens, on the inboard side, of at least three feet long, to prevent the lights from being seen across the bow.

D.—Extract from the Admiralty Rules of 1858, published in the London Gazette of March 5, 1858.

2. The masthead light shall be so constructed as to be visible on a dark night, with a clear atmosphere, at a distance of at least five miles, and shall show an uniform and unbroken light over an arc of the horizon of twenty points of the compass, and it shall be so fixed as to throw the light ten points on each side of the ship, viz., from right ahead to two points abaft the beam on either side.

3. The green light on the starboard side and the red light on the port side shall be so constructed as to be visible on a dark night, with a clear atmosphere, at a distance of at least two miles, and show an uniform and unbroken light over an arc of the horizon of ten points of the compass, and they shall be so fixed as to throw the light from right ahead to two points abaft the beam on the starboard and on the port sides respectively.

4. The side lights are to be fitted with inboard screens projecting at least three feet forward from the light, so as to prevent the lights from being seen across the bow.

No. 2.—Instructions issued by the Board of Trade to Surveyors, 1868–1891.

A.—*Instructions issued in* 1868.

The attention of the Board of Trade has frequently been called to the want of uniformity in the range of the lights of seagoing ships, and in the position of the screens and other fittings. The Board of Trade have, therefore, after consulting the Board of Admiralty and the Elder Brethren of the Trinity House, decided on issuing the following instructions:—

1. The surveyors of steam vessels, appointed under section 305 of the Merchant Shipping Act, 1845, and the inspectors of lights and fog signals, appointed under section 30 of the Merchant Shipping Act Amendment Act, 1862, should be very particular in examining the lanterns containing the masthead light, and the coloured side lights of steam and sailing vessels. They should satisfy themselves—

*First.*—That these lights are, as required by Article 3 of the Regulations, of such a character as to be visible on a dark night with a clear atmosphere to the distance therein named, viz., the fore-mast-head light of steam ships a distance of at least five miles, and the coloured side lights of both steam ships and sailing ships a distance of at least two miles. These conditions are to be complied with without reference to the size of the ships carrying these lights.

*Secondly.*—That the lantern containing the masthead light for steam ships under weigh is so constructed and is so placed as to show the light from right ahead to two points abaft the beam on each side.

*Thirdly.*—That lanterns containing the coloured side lights of steam and sailing ships are so constructed as to show the coloured light from right ahead to two points abaft the beam, on the starboard and port sides respectively. It has been represented to the Board of Trade that lanterns are being constructed and sold that cannot show the lights in the required directions, on account of insufficient range of lens or other defects of construction. The surveyors must not on any account pass lanterns for either masthead or coloured side lights unless satisfied that they are so constructed as to throw the light in the required directions.

Glasses for these lanterns are usually cast in circles. Inferior lanterns contain only a quarter of a circle, and when this is the case they cannot be depended on.

The surveyor should be careful to look closely into this. (*See* Figs. 1 and 2.)*

*Fourthly.*—That the lanterns, burners, lenses, and reflectors are in good and serviceable condition.

*Fifthly.*—That lanterns containing the red and green side lights are so placed that the lights will not be obscured by any of the fittings of the vessel.

In inspecting or surveying the lanterns, special care should be taken that they are clear of catheads, boats, boats' davits, sails, and rigging, &c.; with this view care should be taken that the side lights are not placed too far aft. The best position for the lantern containing the side lights of steamers is generally abreast of the foremost shroud of the fore rigging. The surveyor will not, however, insist upon their being placed in this position, but will suggest it to the owners, and make a note on the papers when he thinks that the lights are badly placed, and when the owners refuse to alter their position.

The position of the lamps must be, of course, to some extent governed by the size, form, and rig of the vessel; but in the absence of special circumstances, the side lights should not be passed by the surveyor or inspector if they are placed abaft the broadest part of the ship; and if in any case he passes them when they are placed abaft the broadest part of the ship, he should forward a special report to the Board of Trade stating the special circumstances of the case.

*Sixthly.*—That there are suitable and proper fittings for the lamps and screens. The practice of attaching the lamps to screens secured to the rigging alone must be discouraged.

*Seventhly.*—The Regulations require that the coloured side lights shall be fitted with inboard screens projecting at least three feet forwards from the lights. Care must be taken that the screens are three feet long, or such greater length as the position of the light with regard to the screen and its distance from the head of the vessel may render necessary.

* The following note is attached to the Regulations of 1852:—"The "system of night lights laid down in the above Regulations has been "adopted in Her Majesty's Service and by the Governments of the "principal Foreign Maritime Nations."

Inferior lamps contain a lens of only a quarter of a circle.

*Lamps fitted with lenses of only a quarter of a circle are generally defective in range, should always be looked on with suspicion and should not be passed unless the light is seen clearly to show over the required arc of 10 points of the compass.*

*Lenses should be of the range shown above, viz. an arc of 10 points of the compass.*

Fig. 2.

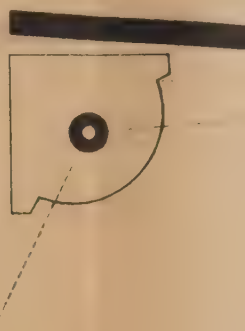


Fig. 3.

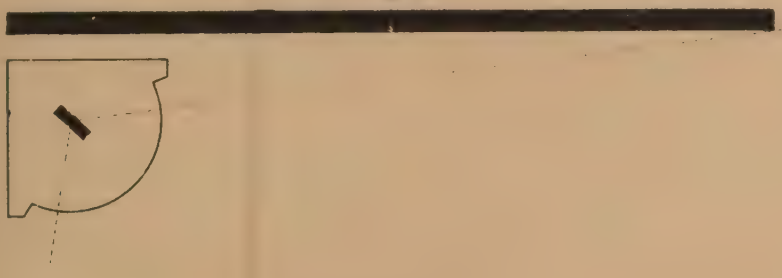


Fig 4.

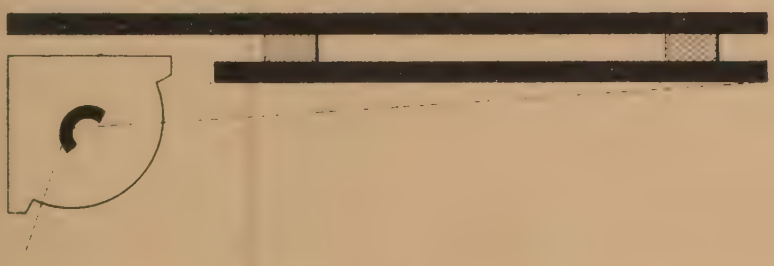


Fig. 5.

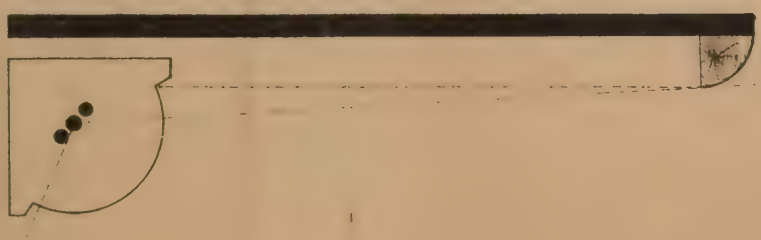


Fig 6.

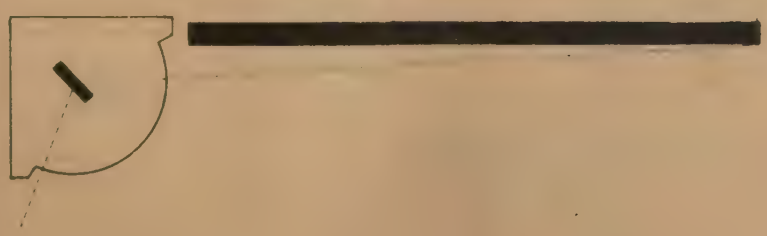


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Fig. 7.

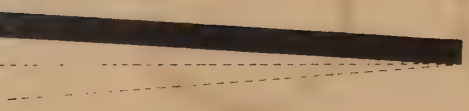


Fig. 8.

Wyman & Sons, Lᵗᵈ, Lith. 7160-6-95.

The surveyor would do well to observe the effect of alterations in the distance of a side light from its inboard screen. He should also bear in mind that if the lantern is placed at a few inches outside an ordinary straight screen of three feet in length, or even against such a screen, the rays of light will be found to cross the end of the screen so as to be visible to a vessel approaching upon the opposite bow. (*See* Fig. 3.)*

If the surveyor finds that the red and green rays cross each other, he should of course have the defect remedied at once. There are many ways of doing this; for example, the screen may be lengthened; or another board may be placed outside it (Fig. 4); or a chock (equal in thickness to the distance between the inner edge of the lens and the side of the screen) may be secured to the fore end of the screen (Fig. 5); or the lamp may be so placed that the outside of the screen will come against the inner edge of the lens (Fig. 6); or the screens may be so placed that the distance across the ship between their outer sides at the fore end shall be equal to the distance between the inner edges of the lenses of the two lamps. (Fig. 7.)

If the red and green rays cross each other immediately on passing the stem, the red light will be seen on the starboard bow, and the green light on the port bow, as shown in Fig. 8; but on the other hand, if they do not cross, at least to a slight extent, then they cannot both be seen ahead.

The real points to be studied in fixing and arranging the inboard screen appear to be—

*First.*—To ensure that the rays of the red and green side lights do not cross each other immediately on leaving the ship, nor at all more than is possible; and,

*Secondly.*—To ensure that the distance ahead within which neither light is seen is not greater than can be avoided.

2. When the surveyor is inspecting the lamps of a tug steamer under the Merchant Shipping Act of 1862, or is surveying for a passenger certificate under the Merchant Shipping Act of 1854, a steamer which he has reason to believe is or will be employed in towing other vessels, he will require the steamer to be provided with two properly constructed masthead lamps, in strict accordance with Article 4 of the Regulations.

3. The surveyor will also see that every steam or sailing vessel which he surveys or inspects is provided, in accordance with Article 7 of the Regulations, with a globular lantern, of at least eight inches in diameter, to be used when riding at anchor.

4. Whenever the surveyor is called on to survey crew spaces under the Act of 1867, he should also inspect the lights and fog signals under the Act of 1854.

5. He should point out to owners and masters the necessity of a strict compliance with the Regulations; and, in carrying into effect the instructions contained in this circular, he should do all in his power to prevent unnecessary delay or inconvenience; but if an owner or master objects or refuses to make the alterations or additions which the surveyor points out as necessary, a report on the Form Stm. 21 is to be sent at once to the collector of customs, who will thereupon, under section 30 of the Merchant Shipping Act Amendment Act, 1862, refuse to grant the vessel a clearance until he receives from the surveyor a report, on the Form Stm. 22, that the Regulations are complied with. A similar report to that sent to the collector is to be sent to the master or owner.

THOMAS GRAY,
Assistant Secretary, Marine Department.

*Note.*—Supplies of this circular should be obtained by the surveyors in the usual manner from the superintendents of mercantile marine offices, and copies should be given to any masters or owners of ships desirous of having them.

* Plate I.

B.—EXTRACT from the INSTRUCTIONS to SURVEYORS issued in 1872.

If the surveyor finds that the red and green rays cross each other, he should of course have the defect remedied at once. There are many ways of doing this: for example, the screen may be lengthened, or another board may be placed outside it (fig. 4); or a chock (equal in thickness to the distance between the inner edge of the lens and the side of the screen) may be secured to the fore end of the screen (fig. 5); or the lamp may be so placed that the outside of the screen will come against the inner edge of the lens (fig. 6); or the screens may be so placed that the distance across the ship between their outer sides at the fore end shall be equal to the distance between the inner edges of the lenses of the two lamps (fig. 7).

C.—EXTRACT from the INSTRUCTIONS of 1875.

The inboard screens should be so fitted as to prevent the red and green rays crossing too close to the ship. There are many ways of doing this: for example, the screen may be lengthened, or another board may be placed outside it (fig. 7); or a chock (equal in thickness to the distance between the inner edge of the lens and the side of the screen) may be secured to the fore end of the screen (fig. 8); or the lamp may be so placed that the outside of the screen will come against the inner edge of the lens (fig. 9); or the screens may be so placed that the distance across the ship between their outer sides at the fore end shall be equal to the distance between the inner edges of the lenses of the two lamps (fig. 10).

For both lights to be seen ahead it is necessary that the red and green rays should cross at a certain distance ahead. Surveyors will probably find that if the inboard edge of the wick touch a line that is parallel with the keel of the ship, and that cuts the outer edge of the forward end of the inboard screen, the rays will cross suitably.

D.—EXTRACT from the INSTRUCTIONS of 1879.*

The inboard screens should be so fitted as to prevent the red and green rays crossing too close to the ship. There are many ways of doing this: for example, the screen may be lengthened, or another board may be placed outside it (fig. 7); or a chock (equal in thickness to the distance between the inner edge of the lens and the side of the screen) may be secured to the fore end of the screen (fig. 8); or the lamp may be so placed that the outside of the screen will come against the inner edge of the lens (fig. 9); or the screens may be so placed that the distance across the ship between their outer sides at the fore end shall be equal to the distance between the inner edges of the lenses of the two lamps (fig. 10).

For both lights to be seen ahead it is necessary that the red and green rays should cross at a certain distance ahead. Surveyors will probably find that if the inboard edge of the wick touch a line that is parallel with the keel of the ship, and that cuts the outer edge of the forward end of the inboard screen, the rays will cross suitably.

E.—EXTRACT from the INSTRUCTIONS of 1887.†

The inboard screens should be so fitted as to prevent the red and green rays crossing too close to the ship. There are many ways of doing this: for example, the screen may be lengthened, or another board may be placed outside it (fig. 7); or a chock (equal in thickness to the distance between the inner edge of the lens and the side of the screen) may be secured to the fore end

* Identical rules are laid down in the corresponding paragraphs of the Instructions of 1884.

† Identical rules are laid down in the corresponding paragraphs of the Instructions of 1891.

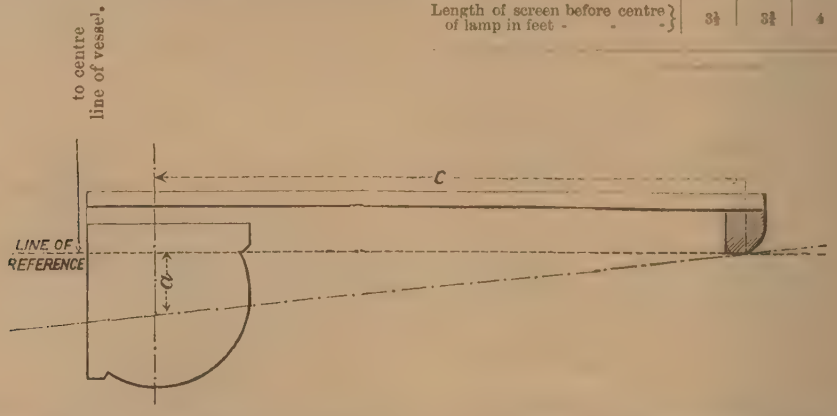
App. 1, Nos. 2 and 3.

of the screen (fig. 8); or the lamp may be so placed that the outside of the screen will come against the inner edge of the lens (fig. 9); or the screens may be so placed that the distance across the ship between their outer sides at the fore end shall be equal to the distance between the inner edges of the lenses of the two lamps (fig. 10).

As regards the distance before the lights where the rays cross, if the screens are fitted as shown in figures 7, 8, 9, or 10 of the instructions, *i.e.*, so that the line joining the inner side of the lens and the forward outboard edge of screen (or chock, if one is fitted) is parallel to the centre line of the vessel, or if the screens are fitted as in figure 6, the following will give the

For 40 feet beam where $b = 20$ feet.

| Distance $a$ in inches from Line of Reference to Point where most convergent ray cuts transverse central Line of Lamp. | Distance in Feet forward of Screen to the Point where ray crosses centre Line of Vessel. | | | | |
|---|---|---|---|---|---|
| 2 | 420 | 450 | 480 | 510 | 540 |
| 2½ | 336 | 360 | 384 | 408 | 432 |
| 3 | 280 | 300 | 320 | 340 | 360 |
| 3½ | 240 | 257 | 274 | 291 | 308½ |
| 4 | 210 | 225 | 240 | 255 | 270 |
| Length of screen before centre of lamp in feet | 3½ | 3¾ | 4 | 4¼ | 4½ |




distance in feet from *centre of lamp* to the point where a ray first crosses the centre line of vessel produced.

$$\frac{12bc}{a} + c$$

Where $a$ = distance in inches from the line through forward outboard edge of screen drawn parallel to the centre line of vessel, and the point where the most convergent ray cuts thwartship centre line of lamp. This ray is that which crosses the centre line of vessel at the shortest distance ahead.

$b$ = distance in feet between the line of reference and the centre of the vessel.

$c$ = length in feet of screen before centre of lamp.

or the distance in feet before the *forward edge of screen* to the point where the ray crosses the centre line of the ship is

$$\frac{12bc}{a}.$$

Thus, if always measured from the forward edge to the screen, the distance ahead where the ray from the lamp crosses the centre line varies directly as the beam and the length of the screen, but inversely as the distance $a$, the position of which is to be determined by actual inspection of the lighted lamp, and this fixes the direction of the most convergent ray of light.

For 20 feet beam where $b = 10$ feet.

| Distance $a$ in inches from Line of Reference to Point where most convergent ray cuts transverse central Line of Lamp. | Distance in Feet forward of Screen to the Point where the ray crosses centre Line of Vessel. | | | | |
|---|---|---|---|---|---|
| 2 | 210 | 225 | 240 | 255 | 270 |
| 2½ | 168 | 180 | 192 | 204 | 216 |
| 3 | 140 | 150 | 160 | 170 | 180 |
| 3½ | 120 | 128½ | 137 | 145½ | 154½ |
| 4 | 105 | 112½ | 120 | 127½ | 135 |
| Length of screen before centre of lamp in feet | 3½ | 3¾ | 4 | 4¼ | 4½ |

No. 3.—Case for the Opinion of the Attorney-General, the Solicitor-General, Sir Richard Webster, Q.C., Mr. Sutton, and Dr. Raikes.

The Merchant Shipping Act Amendment Act, 1862, section 25, provides as follows:

On and after the 1st day of June 1863, or such later day as may be fixed for the purpose by Order in Council the regulations contained in the table marked (C.) in the schedule hereto shall come into operation and be of the same force as if they were enacted in the body of this Act, but Her Majesty may from time to time, on the joint recommendation of the Admiralty and the Board of Trade, by Order in Council, annul or modify any of the said regulations, or make new regulations in addition thereto, or in substitution therefor, and any alterations in, or additions to such regulations made in manner aforesaid shall be of the same force as the regulations in the said schedule.

The Merchant Shipping Act, 1873, section 17, provided as follows:

"If in any case of collision it is proved to the court before which the case is tried, that any of the regulations for preventing collisions contained in or made under the Merchant Shipping Acts, 1854 to 1873, has been infringed, the ship by which such regulation has been infringed shall be deemed to be in fault, unless it is shown to the satisfaction of the court that the circumstances of the case made departure from the regulation necessary."

Copies of the Orders in Council and regulations made in pursuance of section 25 of the Merchant Shipping Act Amendment Act, 1862, are left herewith, and, as counsel is aware, the last of such Orders in Council dated the 30th of January, 1893, contains an addition to the regulations with reference to ships' side lights in order to explain Articles 3 and 15 of the regulations, and to remove doubt and misapprehension concerning the effect of such articles.

The following are copies of letters addressed to the Board of Trade by the Liverpool Steam Ship Owners Association:—

The Liverpool Steam Ship Owners' Association,
10, Water Street, Liverpool,
Sir, 7th February 1893.

*Side Lights.*

With reference to the Order in Council dated the 30th ultimo, that appeared in the "London Gazette" of the 3rd instant dealing with this matter, I am instructed to again urge upon you on behalf of my Association the importance of the Board suspending their action until this country is able to act in concurrence with the foreign countries who have adopted the international

regulations. In urging this course upon you my justification must be the extreme importance of the matter to shipowners in this country.

In considering whether or not the Order of the 30th ultimo merely explains Article 2, sub-section *d*, I would venture to draw your attention to the case of the "Fire Queen" decided by the late Mr. Justice Butt in 1887. In his judgment in that case the learned judge said: "I am strongly inclined to believe that the right "thing to aim at would be to adhere to the arc of 10 "points, starting from two points abaft the beam, and "to carry the light so as to allow it to be seen no further "forward than an arc of 10 points would allow. That "would leave, if it were exactly carried out and the "ship were motionless, a space in darkness right ahead "equivalent to the beam of the ship, but the lights "would not then be visible across the stem."

If Mr. Justice Butt's interpretation of the regulations is correct, then I would submit that it is obvious that the courts of the foreign countries who were parties to the making of such regulations will not be bound by the Order of the 30th ultimo. On the other hand, even if Mr. Justice Butt's interpretation of the regulations is incorrect, still the question of the proper interpretation to be put on the regulation is left in such doubt that it must be uncertain whether or not the foreign courts would adopt the explanation adopted by the Order of the 30th ultimo.

In the meantime the shipowner must be exposed to the risk of having claims which may amount to many thousands of pounds made on him in foreign countries in consequence of his non-compliance with the international regulations.

Apart from these considerations I would point out that before the regulations of 1880 were sanctioned, the foreign countries parties to the international regulations were consulted, and their approval obtained to the new regulations.

Having regard to these circumstances, on behalf of my Association I would urge upon you the re-consideration of the position in which the British shipowner is being placed by the act of the Board.

I have, &c.
(Signed) GRAY HILL,
Secretary.

The Right Hon. A. J. Mundella, M.P.
President, Board of Trade.

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The Liverpool Steam Ship Owners' Association,
10, Water Street, Liverpool,
14th February, 1893.

SIR,

*Side Lights.*

I AM instructed by my Association to communicate with you in further reference to the Order in Council dated the 30th ultimo, having regard to the answer given by you in the House to Mr. Houston on the 10th instant.

May I again point out that the position in which this question stands is as follows:

Since the year 1863 until the Order in Council made on the 30th ultimo, Article 2, sub-section *d* of the Regulations for Preventing Collisions at Sea has always provided that a vessel's side lights should be so screened "as to prevent these lights from being seen across the "bow." This regulation has been adopted by:—

| | |
|---|---|
| Austria. | France. |
| Russia. | Belgium. |
| Netherlands. | Spain. |
| Germany. | Norway. |
| Chili. | Greece. |
| Sweden. | Denmark. |
| Portugal. | United States. |
| Italy. | |

The effect of the article has been repeatedly considered by the English courts, and in one reported decision, the case of the "Fire Queen," the English Admiralty Court has distinctly laid down that under the Article, the lights must be so screened as not to cross the line of the ship's keel projected ahead of the ship.

By the Order in Council of the 30th ultimo, the the Board of Trade, although in words purporting only to explain the meaning of Article 2, sub-section *d*, have in fact made an entirely new regulation, as the effect of their explanation is to require that the lights "shall "cross the line of the ship's keel projected ahead of "the ship at a reasonable distance ahead of the ship." This alteration has been made without apparently the



foreign powers, who were parties to and are bound by the original regulations, having been consulted in any way, certainly without their concurrence in the alteration having been obtained. App. I, No. 3.

On no previous occasion, so far as my Association is aware, has any material alteration been made in the regulations of 1862 without the concurrence of the foreign powers.

In the opinion of my Association, whilst it may be a matter of opinion as to whether or not the alteration proposed by the Board of Trade is one that should be adopted, there can be no question as to the importance of maintaining the international character of the Regulations for Preventing Collisions at Sea, and it is in the opinion of my Association greatly to be regretted that any steps should have been taken which tend to destroy the international character.

Apart from these considerations I would again draw your attention to the serious pecuniary risk to which the British shipowner is being exposed by reason of the alteration having been made without international sanction. In British waters the shipowner is bound to obey the Order in Council and will be held responsible for any disobedience to it, but in foreign waters it is equally clear that he will be held responsible for any disobedience to the international regulations. So long as Mr. Justice Butt's judgment stands it is impossible for the British shipowner to obey both at the same time.

Having regard to these circumstances I would again, on behalf of my Association, urge upon you the reconsideration of the position in which the British shipowner is being placed by the action of the Board, and the advisability of at once suspending the operation of the Order in Council until the concurrence of the foreign powers has been obtained to the alteration.

I am, &c.
(Signed) GRAY HILL,
Secretary.

The Right Hon. A. J. Mundella, M.P.

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The receipt of these letters was duly acknowledged.

In March 1893 the Board of Trade issued a notice, of which the following is a copy:—

*Notice to Shipowners and Masters.*

*Screening of Side Lights.*

The Board of Trade desire to call the attention of shipowners and masters to the accompanying copy of a recent Order in Council of the 30th January 1893, explaining the regulations contained in the Order in Council of the 11th August 1884 as regards the screening of side lights.

No declaration for a passenger certificate is, after the 1st May next, to be issued to any vessel whose side lights are not screened as required by the Order in Council. The Board of Trade in the meantime accept no responsibility where the Order in Council is not complied with.

GEORGE J. SWANSTON,
Assistant Secretary,
Marine Department.

Board of Trade,
March 1893.

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The following correspondence ensued:—

The Liverpool Steam Ship Owners' Association,
10, Water Street, Liverpool,
27th March 1893.

SIR,

*Screening of Side Lights.*

I AM instructed by my Association to communicate with you with reference to the notice to shipowners and masters (Handbill No. 120) that has recently been issued by the Board of Trade. From this notice the members of my Association understand that after the 1st May next no passenger certificate will be issued for any vessel whose side lights are not screened as required by the new Order in Council. In the opinion of my Association the result of making the new regulation effective as from the 1st May as against passenger vessels, but not effective as against vessels other than passenger vessels, and not effective as against foreign vessels, will be to send to sea at the same time vessels whose lights are screened on principles entirely different, and thus to enormously increase the risk of collisions at sea.

App. 1, No. 8.

My Association, in the interests of the British shipowners generally, trust that you will see your way to suspend the enforcement of the new regulation until you have got the approval of foreign powers to the alteration that such Order makes in the regulations of 1880 and 1884, and that the Board of Trade will not make the regulations until they have been so approved effective against only one class of vessels.

I have, &c.
(Signed) NORMAN HILL,
Secretary.

The Right Hon. A. J. Mundella, M.P.,
President, Board of Trade.

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Board of Trade,
SIR, 11th April 1893.

WITH reference to your letter of the 27th ultimo, addressed to the President of the Board of Trade regarding the notice recently issued by this Department to shipowners and masters respecting the screening of ships' lights, I am directed by the Board of Trade to state that it is not the case that the regulations contained in the Order in Council of the 30th January last on the subject of ships' lights will be made effective as regards British passenger vessels only. All British vessels and all foreign vessels in British jurisdiction, whether such British and foreign vessels do or do not sail under the Passengers Acts, will be required to have their side lights screened in accordance with the regulations contained in the Order in question.

I am to add that steps have been taken to communicate the Order to foreign powers, and that the Board see no reason for postponing the enforcement of the Order beyond the date already referred to.

I am, &c.
The Secretary, (Signed) GEORGE J. SWANSTON.
Liverpool S.S. Owners' Association,
10, Water Street, Liverpool.

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A further communication was received from the Liverpool Steam Ship Owners' Association, of which the following is a copy:—

The Liverpool Steam Ship Owners' Association,
10, Water Street, Liverpool,
SIR, 26th April 1893.

*Side Lights.*

IN further reference to the correspondence my Association have had with you with reference to this matter, I am now instructed to send to you herewith a copy of a case submitted under the instructions of my Association for the opinion of Sir Walter Phillimore, Q.C., and Mr. Joseph Walton, Q.C., with the opinion of these gentlemen upon the point submitted to them.

I should explain that with the other papers submitted to counsel was a complete copy of the correspondence.

Having regard to the strong opinion expressed by counsel my Association would again respectfully urge upon you the reconsideration of the whole question.

I have, &c.
(Signed) NORMAN HILL,
Secretary.

The Right Hon. A. J. Mundella, M.P.,
President, Board of Trade.

*The Liverpool Steam Ship Owners' Association.*

*Side Lights.*

*Case for the Opinion of Counsel.*

Herewith are sent—

Copy correspondence between the Association and the Board of Trade.

Print of the memorandum prepared by the association.

Copy of the London Gazette containing an Order in Council, dated the 30th January 1893, made under the Merchant Shipping Act Amendment Act, 1862.

The Liverpool Steam Ship Owners' Association desire counsel's opinion on the points arising on the correspondence and the printed memorandum that are sent herewith.

The President of the Board of Trade, in answer to the questions that have been put to him in the House of Commons, has repeatedly stated that the regulations contained in the Order in Council of the 30th January 1893 do not differ from but are only explanatory of the Regulations for the Prevention of Collisions at Sea contained in the schedule of the Order in Council of the 11th August 1884, and on this ground he has intimated that he does not consider it necessary to obtain the concurrence of the foreign powers who are bound by these regulations to the alteration.

On the Attorney-General being questioned in the House upon that point, the only answer he would give was that in the opinion of the naval advisers of the Board of Trade the Order in Council of the 30th January was only an explanatory Order, and did not make any alterations in the international regulations.

On these facts counsel will please advise:

1. Whether the regulations made by the Order in Council of the 30th January 1893 are merely explanatory of the regulations of 1884, or whether the Order in fact creates an entirely new rule as to the screening of side lights.
2. In either event counsel will please advise whether a British shipowner in complying with the Order of the 30th January 1893 will or will not be complying with Article 3, sub-section *d*, of the regulations of 1880 and 1884.
3. If counsel is of opinion that the shipowner in complying with the Order in Council of the 30th January 1893 will be acting contrary to the provisions of Article 3, sub-section *d*, of the regulations of 1880 and 1884, counsel will please advise whether a British shipowner will be held responsible for such non-compliance in the courts of the foreign countries who are parties to the regulations of 1880 and 1884.
4. Counsel will also please advise on the general questions raised in the correspondence.

*Opinion.*

1. The regulation of the 30th January 1893, Article 3 (*e*) is undoubtedly a new rule, the infringement of which by any vessel will cause such vessel, in case of collision, to be held to blame.

2. The new regulation seems to suggest that the words "across the bow" in Article 3 (*d*) means "across the bow of the ship itself." In our opinion this is not the correct construction of the words. We think that they mean the same thing as "across the line of the keel projected ahead." If this is so the new regulation is inconsistent with Article 3 (*d*). A shipowner who has his side lights fixed as required by the new regulation does not comply with the terms of Article 3 (*d*).

3. It must, however, be remembered as pointed out in the "Fire Queen," that a literal compliance with all the requirements of Article 3 is impracticable. What is required is a reasonable compliance. It is difficult to advise as to what view a foreign tribunal would take as to what is a reasonable compliance with the regulation. We think, having regard to the plain inconsistency in terms between the new regulation and Article 3 (*d*) that an English shipowner who has complied with the new regulation would be in danger before a foreign tribunal of being held responsible for a breach of Article 3 (*d*). Where, however, the foreign legislation does not include any provision similar to section 17 of the Merchant Shipping Act 1873, and the court has to consider whether the breach in fact contributed to the collision, the danger would probably not be serious.

4. We think that the Board of Trade would have accomplished what appears by the correspondence to have been their main object, viz., the prevention of excessive crossing of the lights by directing their surveyor not to pass side lights so fixed that the angle exceeded 4°. Such a regulation might have been made without creating the present difficulty. We may point out that a foreign vessel may be held to blame in the English Court for a breach of the new regulation, although such vessel has complied with the regulations which have been made binding upon her by the legislation of her own country with the concurrence of the British Government. It seems unfortunate that Article 3 should be made to say in one sub-section that the lights shall not be seen across, and in another that they shall cross at a reasonable distance ahead.

WALTER G. F. PHILLIMORE.
JOSEPH WALTON.

Temple,
April 22, 1893.

The above opinion having been submitted to Dr. Raikes, he wrote the following observations thereon:—

"Prior to the making of the Order in Council of the 30th January 1893, there certainly was, as the Order itself recites 'doubt as to the effect of Articles 3 and 15.' It was always open to argument that 'across the bow,' Article 3 (*d*), meant across the line of the keel projected ahead of the ship, and there has never been a judicial decision on the point so far as I have been able to ascertain.

"The case of the 'Fire Queen,' 12 P. D. 147, 6 Asp. M. L. C. 146, as a judicial decision at most held that under the rules then existing (1887) a vessel reasonably complied with the regulations notwithstanding her bow light was obscured to the amount of 2½° or 3° from right ahead of itself; there was no question as to its showing across the bow, whether inboard or as meaning the line of keel projected ahead of the ship, and the further observations of the learned judge are *obiter dicta*; the question of how Articles 3 (*d*) and 15 are to be read together and not argued before him.

"It must be clear that the case of the 'Fire Queen,' though doubtless correct as to its decision in itself, showed what dangerous latitude the rules allowed as to the screening of lights. Two sailing vessels, with lights screened as the 'Fire Queen's' were, might be meeting 'end on' or 'nearly end on' and neither see any light of the other before the vessels were actually in collision. The judgment discloses a possible weak place in the rules which the Order in Council heals without inconsistency.

"It may indeed be said that the whole judgment, so far as it held that the lights reasonably complied with the regulations was *obiter*, for the learned judge finds as a fact that the obscuration could have had nothing to do with the collision, and that finding was sufficient to decide the case (Eastern S.S. Co. *v.* Smith, the Duke of Buccleuch (1891), A. C. 310, and cases there cited).

"I have already said that prior to the recent Order in Council there was a doubt, and the existence of the doubt called for the Order in Council, but I think it is not difficult to show, with all possible deference to the contrary opinion as to the true construction of the rules of Sir Walter Phillimore and Mr. Joseph Walton, that across the bow meant across the bow of the ship itself, and not across the line of the keel projected ahead of the ship.

"In the first place, when coloured lights were introduced for steam vessels in 1852, there was no provision for the place where they were to be exhibited, and as a matter of practice they were, I believe, shown right forward, one at each knight head, or on each side of the stem; this position would, so far as I can see, even now comply with the regulations, but the proviso was inserted that wherever shown they were not to show across the bow. Nothing would have been easier or more natural than to say they were not to show across the course of the vessel or on the other bow if that had been meant, but the other phraseology was used. The French version throws much light on the point, as in describing the arc over which the light is to show it says, 'un arc horizontal de 10 quarts du compas qui est compris entre l'avant du navire (ahead of the ship) et 2 quarts sur l'arrière,' and this phraseology is still preserved; the language used is all the more pointed when it is noticed that in speaking of the mast head lights the words 'du navire' are left out as there unnecessary, the expression being simply 'depuis l'avant jusqu'à 2 quarts en arrière,' which shows that the words were intentionally inserted with regard to the side lights. The French version is the only really important one to be considered, as that and the English version were issued together as of equal authority, and the other nations simply translated them. It may, however, be meant, and that both the Spanish and the Portuguese translation adopt words referring to the head of the ship.

"After some time it was found that seamen were giving too wide an interpretation to Article 15 in its original form (Article 13 of the rules of 1863), and that the constant use of port helm in cases where vessels were in fact crossing or starboard to starboard was leading to collisions, and the explanation of that Article was given by the Order in Council of July 1885 and subsequently in the Rules of 1897, incorporated with the Articles itself. The addendum clearly contemplates that lights should be seen together when the vessel carrying them is end on or nearly so, *i.e.*, that they both should be seen ahead of the ship herself and not merely each ahead of itself when they could not be seen together at all, but it goes further and makes the seeing of both lights together at night the correlative of the ship being seen to be nearly end on by day. App. I, No. 3.

"At the time this addition to the rules was made there can be no doubt that the practically universal plan was to carry the lights at the side of the ship, and it is obvious, both from practical considerations, simple experiments, and elementary mathematics, that if lights so carried are to be seen ahead of the ship itself, *i.e.*, on the line of the keel at any distance, they must at any further distance be seen across the line of the keel. If this is not so, the latter part of the second clause of the addendum to Article 15 has no meaning, and that is a view abhorrent to the law. If a statute is ambiguous, but one reading conveys an intelligible meaning and the other does not, it is a well recognised principle of interpretation that the former must be adopted; Maxwell on 'Interpretation of Statutes,' p. 242 (ed. 1883), and cases there cited. For all these reasons, I am of opinion that the first part of the new Order in Council, though a new rule in the sense that it has not previously been formulated in words, is not new in the sense of adopting a new principle of construction, though it does bring a person infringing it to a substantial degree under the provisions of section 17 of the Merchant Shipping Act 1873, which might not previously have been the case if the dicta in the 'Fire Queen' are to be taken as an accurate statement of the law.

"It must further be observed that Article 3 requires the light to be uniform over 10 points from right ahead to 2 points abaft the beam, *i.e.*, that over that arc it shows its full force; it does not say in terms that it may not show even its full force somewhat further, and I have endeavoured to show that to show its full power right ahead of the ship it must at some distance ahead of the ship show across the line of the keel; and if I am right in my reading of the rule as it stood before the last Order in Council, there is no breach of the regulations in its so doing provided it does not show across the bows inboard. If all vessels carried the lights at or forward of the middle of the ship this proviso might seem needless, but it is to be remembered that the rules are international, and that very many foreign, and indeed not a few British colonial vessels carry their lights right aft, and in the case of a vessel of 30 feet beam, where the lights are carried 250 feet aft, an angle of 4° will just about cut the stem, and against any greater convergence than this it was necessary to guard, and that is in my opinion a reasonable interpretation of the rule as it originally stood, and a good reason for it, *i.e.*, that the inboard screens are to be so fitted that both lights shall always show with their full power right ahead of the ship at a reasonable distance ahead, but shall never cross inboard of the ship. The rule does not say that they shall show only right ahead, and indeed it is impossible that they should do so if from any point on the side they do show right ahead of the ship. Beyond the arc over which the full power of the light is seen, there must be a further arc over which the light is seen with gradually diminishing intensity, unless the light emanated from an actual point, which is, whilst lamps with wicks are used, an impossibility.

"The instructions to surveyors contained in the second part of the Order in Council will not give the full force at 4°; this will not be arrived at till all the direct rays are seen, that is, till the spectator is in a line with the inner edge of the wick, and the foremost end of the screen probably about 2° or 2½°, but I understand the angle has been fixed on as one found by practice to be most common and best adapted to prevent collisions, and required the least possible alteration of existing lights and screens whilst establishing for the future uniformity of practice. It may, of course, be a question whether that angle which has been found to answer well hitherto is too broad considering the present size and speed of ships, and especially in narrow waters, but for the reasons I have stated, especially from the French version of the rules and the conditions necessary to bring the side lights into conformity with that version, I do not think that any foreign court could hold a vessel to blame for having her lights screened as directed by the new Order in Council, but it is of course impossible for anyone to say what view a court, especially as is generally the case abroad, a court not specially cognizant of the subject and unassisted by nautical experts, may take

APP. 1, No. 3.

"I do not think any country, except Sweden and Denmark in the new maritime law common to both States, have any provision analogous to section 17 of the Merchant Shipping Act, 1873.

"I do not see that the form of rule suggested in the joint opinion of Sir W. Phillimore and Mr. Walton would be in any way beneficial. A vessel under it might have her lights screened up to 4° and be in accordance with the English rule, and would in respect to foreign tribunals be in the same position as under the existing Order in Council, whilst if the 'Fire Queen' is to be taken as law, she might still have her lights dangerously divergent.

"F. W. RAIKES.

"7, King's Bench Walk,
"Temple, E.C.
"May 9, 1893."

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It may be observed that if, as suggested in paragraph 4 of this opinion, the Board of Trade had instructed their surveyors not to pass side lights so fixed that the angle exceeded 4°, uniformity would not have been attained. In the same ship one light might then have been screened to 0° whilst the other was screened to an angle of 4°.

Sir Digby Murray, in writing unofficially to Sir Charles Hall upon this subject, enclosed for his information the following memorandum:—

MEMORANDUM showing the angle of convergence of the side lights, supposing them to be screened in the ordinary manner, *i.e.*, the screens extending forward in a line parallel to the keel, the outer surface of the screen touching the inner face of the side light, and with its length measured from the centre of the flame.

Length of screen, 600 ft.

Distance from outer edge of screen to outer edge of wick, 10 inches.

Angle of convergence; 0° 4′ 35″.

Worked example—

| | | |
|---|---|---|
| Log 7200 (+10) = | | 13,857,332 |
| Log 10 | | 1,000,000 |
| | | 12,857,332 |
| | ° ′ ″ | |
| Log tangent A. | 89 55 25 | |
| Angle B. | 90 0 0 | |
| Angle C. | 0 4 35 | |

D. MURRAY.

| Length of screen forward of light in inches. | Angle corresponding to a distance of 10 inches measured from outer edge of screen to outer edge of wick. | Angle corresponding to a distance of 11 inches measured from outer edge of screen to outer edge of wick. |
|---|---|---|
| | ° ′ ″ | ° ′ ″ |
| 36 | 15 32 0 | 16 59 0 |
| 72 | 7 54 30 | 8 42 0 |
| 108 | 5 17 30 | 5 49 0 |
| 144 | 3 58 30 | 4 22 0 |

If Sir Charles Hall and Dr. Raikes are in error in their interpretation of Article 3 (*d*), how does Sir Walter Phillimore reconcile the words "at least 3 feet forward "from the light, so as to prevent these lights from being "seen across the bow" with the above angles?

A print of a further Memorandum by Sir Digby Murray upon the Regulations as to side lights is also left herewith for counsel's information.

Since this case was prepared, the United States Government have intimated their agreement with the new Order in Council, subject to the decision of Congress.

Counsel are requested to advise—

1. Whether the words in Article 3 (*d*) "across the bow" mean across the bow of the ship itself, or whether these words can be construed to mean across the line of the keel projected ahead?
2. And generally upon the opinion of Sir Walter Phillimore and Mr. Joseph Walton.

*Opinion.*

1. With respect to the question whether the words in Article 3 (*d*) of the Regulations "across the bow" mean across the bow itself of the ship, or whether they can be construed to mean across the line of the keel projected ahead, if the language of the sub-article is considered separately, apart from the subject matter of sub-articles (*b*) and (*c*), and also from the provisions of Article 15, of the same regulations, then we think that the words in question are susceptible of either meaning. We are of opinion, however, that in order correctly to interpret the words "across the bow" these provisions of Article 3 must be read together with those of Article 15, and their subject matter examined, and thus considering the two Articles we are of opinion that the expression "across the bow" in Article 3 (*d*) means across the bow itself of the ship and does not mean across the line of the keel projected ahead.

Our opinion on this point is principally based upon the following considerations:—

(*a*) Article 15 is amongst other matters directed to the critical position of two ships meeting end on, or nearly end on, and provides that under such circumstances both lights shall be seen at the same time, and Article 3 (*b*) and (*c*) contemplate that the red and green lights shall show their light ahead of the ship itself.

(*b.*) The construction we have placed upon the words "across the bow" does not conflict with either of these provisions, but it is in harmony with and reconciles both of them.

(*c.*) If these words are interpreted to mean across the line of the keel projected ahead, then the lights would have to be screened so as to prevent the red and green rays crossing the line. Such a construction, however, would be repugnant to both Articles for unless the red and green rays cross the path of the ship it would be impossible to see both lights at the same time in positions in which it was undoubtedly intended that both lights should be seen, and further, it would be impossible for a side light so screened to show a proper or effective light ahead at all.

(*d.*) The language of Article 3 (*d*) itself does not conflict with the view we have expressed, for the earlier part of the Article clearly refers to the ship itself, and in our opinion such words as "across the bow" would not have been used had it been intended to refer to the line of the keel projected ahead.

Moreover the framers of this Article could not have supposed that anything like a 3-foot screen could prevent the rays of the side lights being seen across the path of the ship, or if the lights were carried on the after part of the ship, could do more than prevent them from being seen across the bow itself of the ship.

We may add that the practice followed by the Board of Trade for many years in the instructions given by them to their surveyors as to the fixing and screening of lights appear to have corresponded practically with the opinion above given.

2. With respect to the regulations contained in the Schedule to the Order in Council of the 30th January 1893, we are of opinion, for the reasons already given, that the first of such regulations correctly interprets Article 3 (*d*) with respect to the meaning of the words "across the bow," and its direction that the lights must be "fixed and the screens fitted so that the rays from the red and green lights shall cross the line of the ship's keel projected ahead of the ship at a reasonable distance ahead of the ship" merely expresses what is necessarily and properly involved by such interpretation.

We are accordingly of opinion that this Regulation is merely explanatory of existing Regulations, and that an English shipowner by obeying it would not thereby involve himself in risk before a foreign tribunal.

As to the second of such Regulations, it directs a specific angle of 4° to which the lights are to be fixed and screened. The question whether the Regulation is a new Regulation or not is one of some difficulty, but on the whole, if the angle substantially carries out and gives effect to the instructions which the Board of Trade for many years have given to their surveyors with respect to the fixing and screening of lights, and that compliance with the instructions of the Board of Trade has not given rise to trouble in the past, and assuming that by adopting such angle the rays of the light will cross the path of the ship at a distance ahead of the ship that has hitherto been found safe, we are of

opinion that the regulation embodies no new principle, and that an English shipowner by obeying it would not thereby involve himself in any appreciable risk before a foreign tribunal.

3. We are of opinion that in order to prevent any difficulty arising from these regulations the Order in Council should be communicated to the foreign Governments, and their assent thereto obtained with as little delay as possible.

C. Russell.
John Rigby.
Richard E. Webster.
F. W. Raikes.
Henry Sutton.

Royal Courts of Justice,
12th August 1893.

No. 4.—Report of the Rule of the Road Committee.

To the Right Honourable A. J. Mundella, M.P.,
President of the Board of Trade.

Sir, December 8, 1893.

We have considered the letters received by the Board of Trade from Foreign and Colonial Governments, and from certain British Shipowners' Societies, in regard to the proposed alterations of the International Regulations for Preventing Collisions at Sea, as recommended by the Washington Marine Conference, 1889, and as subsequently modified by the Committee appointed in July 1890, to consider the recommendations of that Conference.

We have also heard representatives from the Shipowners' Societies on the various points raised by them, and we have especially considered the objections made to Articles 15, 21, and 28.

We see no reason to recommend any alteration in the rules submitted by the late Committee in their report, dated June 22, 1892, and we entirely concur in that report, which has received the general approval of the foreign powers.

We witnessed experiments in the screening of sidelights at Shoeburyness on the nights of the 12th and 13th October, and we have carefully considered whether any alteration is desirable in the present regulations as to such screening.

We consider that the rule now in force under the Order in Council of January 1893 merely confirms the previous practice of the Board of Trade, and that the method of measurement now laid down is better calculated to ensure uniformity of screening, and as this practice has up to the present time worked well, we see no necessity for the rule being altered. App. 1, No. 4.

At the same time we desire to point out that no strict uniformity of the angle at which the full strength of the lights is in practice visible is possible so long as a great variety of patterns of lamps are in use, and in view of this fact, as well as of the great improvements which have been and are being made in the construction of lamps, and in the power of illuminants, and of the great increase in the size and speed of ships, we think that the Board of Trade should, in certain cases, upon the request of the shipowner, have power to allow the angle of screening to be reduced to 3°, or in special cases to even less than that angle.

We wish to acknowledge the valuable assistance which we have received from our secretary, Mr. Hipwood, who has, by his industry and ability, materially lessened our labours.

We are, &c.
(Signed) Charles Hall, Chairman.
Courtenay Boyle.
W. C. Angove.
Swinton C. Holland.
R. H. More Molyneux.
D. Murray.
G. S. Nares.
*William Watson.
Chas. G. Weller.
W. J. L. Wharton.

C. Hipwood,
Secretary.

*Separate Report by Mr. Watson.*

Sir,

In signing the foregoing report, I do so subject to my dissent being again recorded to the addition of the words "and speed" to Article 21, as I consider that the very strong opinions expressed against the addition by the shipowners of this country and others fully bear out the view I felt it my duty to put forward on the subject in my former separate report.

I am, &c.
(Signed) William Watson.

The Right Hon. A. J. Mundella, M.P.
December 8, 1893.

* Subject to separate report.

## APPENDIX No. 2.

*Papers handed in by Sir D. Murray.* App. 2, No. 1.

No. 1.—Instructions to Surveyors as to Ships' Lights and Fog Signals, issued in January 1892.

*General.*

1. The following are the revised instructions issued by the Board of Trade to their surveyors respecting lights and fog signals, and supersede Circular No. 526 and paragraphs 72 to 96 of the "Instructions as to the "Survey of Passenger Accommodation, Master's and "Crew Spaces, Lights and Fog Signals."

rtance spec-

2. The Board of Trade attach great importance to the inspection of the lights referred to in the Regulations for Preventing Collisions at Sea, and regard it as one of the most important duties intrusted to the surveyors. At their request, the Commissioners of Customs, with a view to the enforcement of the Regulations, have instructed their outdoor officers to at once report to the surveyors any cases of infringement of the rules which may come under their notice. But the surveyors themselves should take every opportunity of inspecting the lights of vessels lying within their districts, more especially in cases where they have reason to believe that the Regulations are evaded, either wholly or partially; and whenever they are called upon to survey crew spaces, or to do anything on board a ship, they should inspect the lights and fog signals under the Acts.

Upon visiting a vessel for the purpose of inspecting her lights and fog signals, the surveyor should first inquire of the master for the certificate of inspection, *See* para. 4.

If the master produces the certificate in question the surveyor should compare the particulars of the lanthorns and screens, and their position as given in that certificate, with the description and position of the lanthorns carried on board. He should also inspect the fog signals on board.

If the surveyor finds that any particulars, as stated on the certificate, are not in accordance with the state of things on board, he should withdraw the certificate, and when all is in accordance with the Regulations, he should make an indorsement of the fact thereon and return it to the master or owner. A new certificate must not be issued in such a case.

As to detaining ships.

3. In cases in which lights and the means of making fog signals are not fitted and provided in accordance with the Regulations for Preventing Collisions at Sea, the surveyor making an inspection should be careful to fill up one of the forms supplied for the purpose, specifying the additions or alterations required, and give it or send it by post to the owner, master, or agent. He should point out to owners and masters the necessity of a strict compliance with the Regulations, and he should do all in his power to prevent unnecessary delay or inconvenience. A report on the form supplied for the purpose is to be sent at once to the collector of customs, who will, under sect. 30 of the Merchant Shipping Act Amendment Act, 1862, refuse

ART. 2, No. 1.

either (1) to grant the vessel a clearance or (2) to allow her to proceed to sea until he receives from the surveyor a report on the proper form that the Regulations are complied with; but the surveyor should be careful to use discretion in cases involving the detention of vessels for non-compliance with the Regulations as regards the lights and fog signals. He need not in all cases detain the ship. For instance: (*a.*) When the vessel is not about to leave the United Kingdom; (*b.*) When there is no reason to apprehend delay, or to doubt the good faith of the owner or master in carrying the Regulations, &c. into effect.

If the vessel should afterwards leave the port for another port also within the United Kingdom, before the surveyor is satisfied that the requirements have been complied with, he should be careful to communicate with the surveyor of the district or port to which the vessel is about to proceed or has proceeded, at the same time forwarding to him a statement of the expenses which have been incurred on account of the vessel, and giving notice that a fee is due in accordance with the Regulations in addition thereto.

Defects, when made good, certificate to be given.

4. When the additions or alterations required and notified to the owner have been made, and the surveyor is satisfied on further inspection that the Regulations are complied with, a form supplied for the purpose should be filled up and sent to the owner or master, and when the expenses named on the forms have been paid the surveyor should send to the collector a certificate under his hand (as required by the Act) on the proper form, and should fill up and deliver or send to the owner, master, or agent a certificate of inspection, a copy of which should immediately be sent to the Board of Trade, and also entered in the office light-book, with the individual surveyor's rotation number for light certificates. This rotation number should be entered on the original certificate as well as on the copy sent to the Board of Trade.

Regulation lights only to be carried.

5. Complaint has been made to the Board of Trade that certain sea-going steam ships have infringed the Regulations by carrying coloured light signals, used for steering and other purposes, which are not mentioned in or authorised by the said Regulations for Preventing Collisions at Sea. The carrying of any lights other than the lights prescribed by the said Regulations for Preventing Collisions at Sea is a distinct breach both of the provisions of the Merchant Shipping Act Amendment Act, 1862, and of the said Regulations, and will subject the offenders to the penalties and liabilities imposed by the said Act, which will be strictly enforced.

Lights, &c. of foreign vessels.

6. The surveyors have undoubtedly the right to inspect the lights, &c. of foreign ships within British jurisdiction, and in cases in which any surveyor has reason to believe or discovers that the lights of a foreign ship are imperfect, or the screens improperly placed, it is his duty to inspect them, and he should point out to the masters or the agents, if on board the vessel, when they are not in accordance with the Regulations, and it is the surveyor's duty to report to the Board of Trade when he finds foreign vessels' lights are not in accordance with the Regulations. The Board will then give such directions as may be considered best.

*Side Lights.*

7. The following instructions are not intended to be retrospective so far as lights previously fitted are concerned, excepting that the angle (4°) to which the lights are to be screened is always to be insisted upon, but surveyors are desired to use their influence with both owners and lamp-makers to induce them to comply with these instructions, especially as regards the colour of the glasses and the vertical divergence of plano-convex and dioptric lenses.

Lanthorns.

8. Surveyors can only insist on the lanthorns being of such a character and so fitted as to comply with the Regulations, but the following remarks may assist them in forming their judgment.

The width of the back and sides of the lanthorn should not be less than 9 inches, and their height should not be less than 11 inches.

The passages for the admission of air to the interior of the lanthorn should have ample area, and be so arranged that the flame of the lamp will not be extinguished or caused to smoke by the wind or motion of the vessel in rough weather. The lanthorn should be constructed in such a manner as to preclude the possibility of spray or broken water obtaining access to its interior in such quantity as to in any way interfere with the efficiency of the light.

The arm or bracket by which the lanthorn is clamped to the screen should not be less than $\frac{5}{8}$ inch in thickness by 2 inches in breadth; it should be a fairly good fit in the socket of the lanthorn, and be secured in such a manner that the tightening of the clamping screw will bring the side of the lanthorn parallel with the side of the screen. The clamping screw should be brass, T-shaped, and not less than $\frac{5}{8}$ inch in diameter. Or else, which is preferable, the lamp should be cleated to the screen top and bottom.

Lenses.

9. The lenses should be made of crown or flint glass, highly polished, and free from air-bubbles or other visible defects. Plano-convex and dioptric lenses should be made as thin as practicable consistently with efficiently and durability.

In order to insure the light being equally visible at all the required angles, it is desirable—

(1) that the lens should be the arc of a circle, and

(2) that the radius which describes it should be measured from the centre of the flame, so as to insure the latter being horizontally equidistant from every part of the lens; the length of the radius may be ascertained as follows:—

Measure the chord of any portion of the arc and the versed sine corresponding to that chord, when the following formula will give the length of the radius:

$$\frac{a^2}{v} + \frac{v}{2} = r.$$

Where $a$ = half the chord.
,, $v$ = the versed sine.
,, $r$ = radius.

The lens should embrace an angle of not less than 120°, and its height must in no case be less than the length of the radius.

The curvature of the outer face of plano-convex lenses and of the respective parts of the outer face of dioptric lenses should be arranged to give the desired concentration of the rays of light, subject to the condition that the light must be visible in a clear atmosphere on a dark night at a distance of at least one sea mile, when the lamp is heeled 20° either above or below the horizontal plane.

In sailing vessels and fishing smacks, from 10° to 15° would be sufficient, but as there is no difficulty in manufacturing lamps which shall have a vertical divergence of 20° and still show the distance required by the Regulations, it is desirable they should all be uniform in this respect.

Lenses coloured throughout absorb and consequently waste much of the light, and even those having a film of colouring matter over the inside face are frequently not as satisfactory as is desirable.

The surveyors should discourage the use of lenses coloured throughout, and when opportunity offers call attention to the obvious superiority of white lenses with coloured glass slides placed behind them.

When, however, the distinctive colouration is produced in this manner, suitable means should be provided for keeping the slide in its proper position, and for preventing the door of the lanthorn from being closed when the slide is displaced.

In some lamps these slides are fixtures, and the lens is hinged on the outside of the lamp so as to admit of both the slide and the lens being properly cleaned; the lens is also so fitted as to enable a current of air to pass between it and the slide. These lamps have given a very good result when tested at Shoeburyness; whether they succeed in practice it will take time to determine, but the fitting appears to be a very desirable one.

Colour.

10. The colour is a matter of very great importance, and the Board of Trade will send to each district samples of red and green glass, of two different tints. Slides of the same tint as either of these standards or of any intermediate tint may be regarded as satisfactory.

Corrugated lenses.

11. The attention of the Board of Trade has been called to the fact that a number of vessels use for side, masthead, and anchor lights, lenses having vertical corrugations or ridges on their inner surfaces. The effect of these corrugations is to cut up and obstruct the light and to rob the coloured lights of their distinctive colour when seen from certain positions. All these defects are objectionable in the case of lenses of coloured side-lights, and such lenses should not be passed.

*Plate II. To face page 206.*

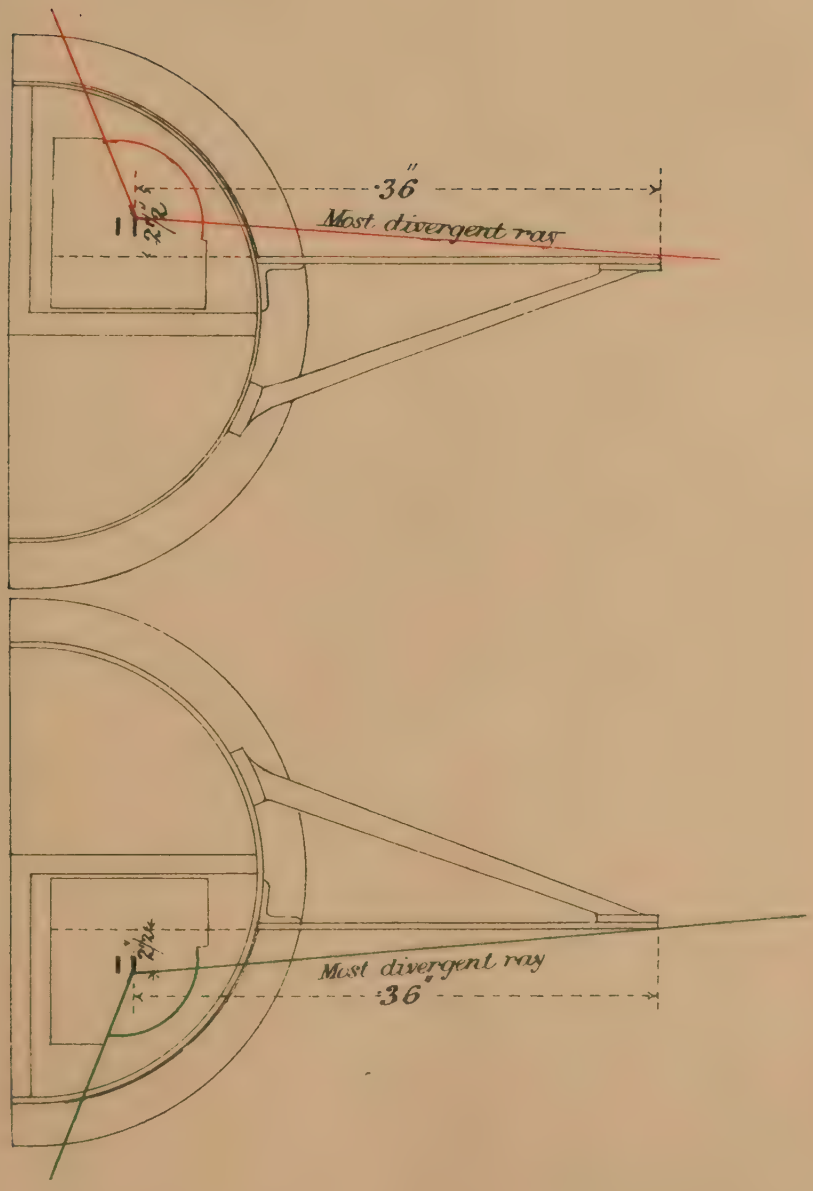


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*Plate III.*

# DIAGRAM No 4.

*Fig. 1.*

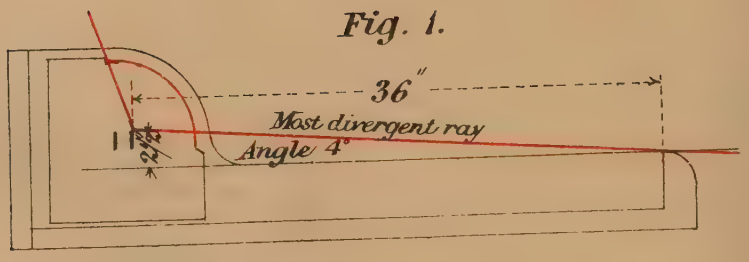


*Fig. 2.*

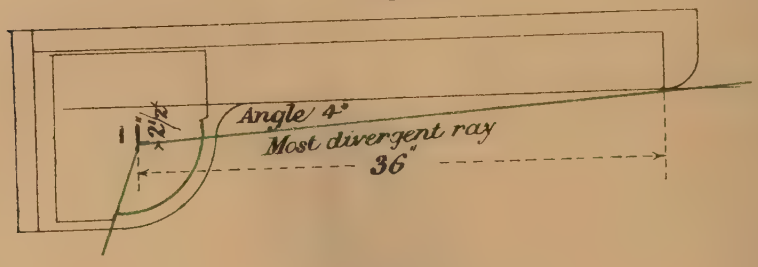


*Fig. 3.*

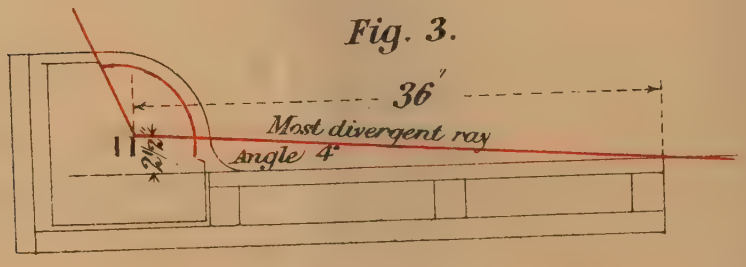


*Fig. 4.*

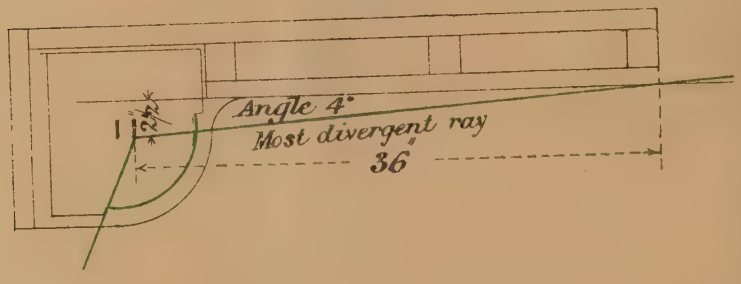


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*Plate IV. To face Plate III.*

# DIAGRAM No. 1

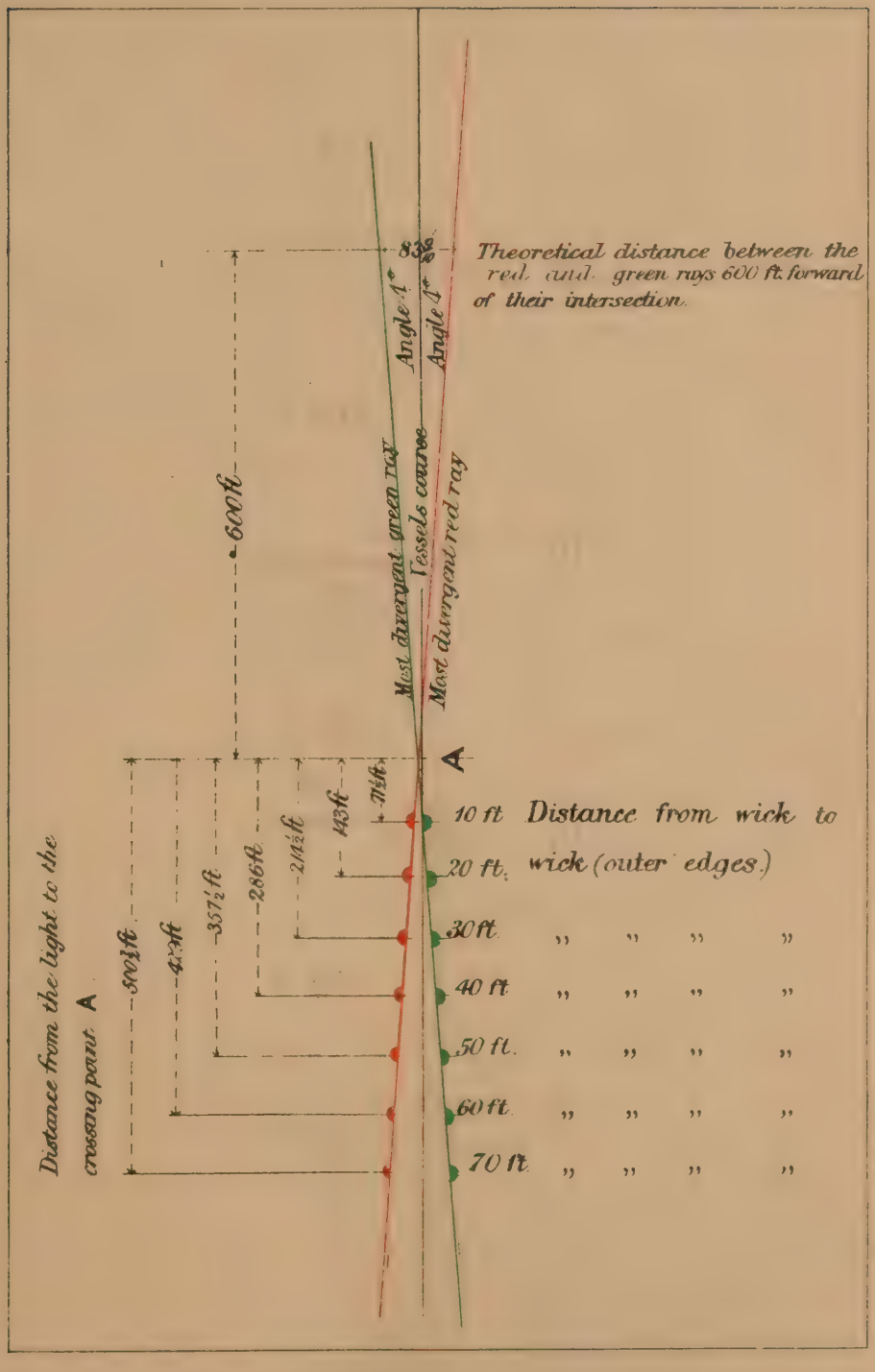


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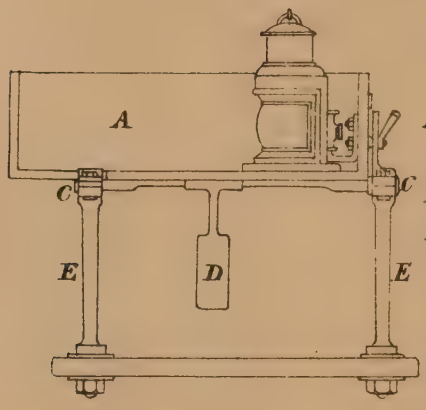
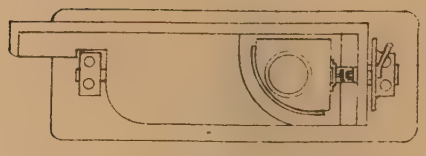
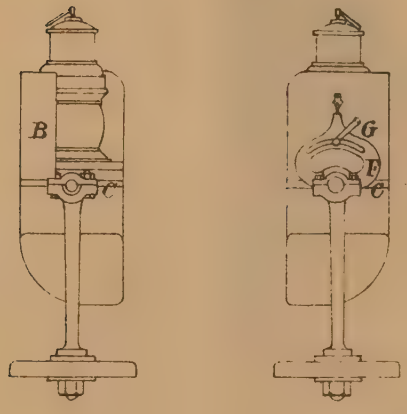
*Plate V. To face page 207.*

# DIAGRAM Nº 3.




*A.....Screen.*
*C.C. Pivots of screen*
*D.....Balance weight*
*E.E. Stanchions.*






*B.....Cheek*
*C.C....Pivots of screen*
*F.....Plate fixed to stanchions*
*G.....Screw by which screen may be firmly clamped to plate F at any required angle.*

*When sidelights are hung in gimbals with fixed screens the points of support should be in the same horizontal plane as the centre of the lens. When as is preferable they are fitted so that both screens and sidelights adapt themselves to the motion of the ship they should be fitted as shown in the above drawing. It is not intended the screen should be clamped in a fixed position unless the quick uneasy motion of the Ship renders this necessary.*

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12. The cistern of the lamps should contain sufficient oil to last for at least 12 hours; it should not intercept any of the rays that would otherwise fall on the lower half of the lens, and its height should be such that the most luminous part of the flame will be level with the centre of the lens. The centre of the wick, or system of wicks when there are more than one, should coincide with the centre of the curvature of the inner face of the lens; and the base of the lamp should be so arranged, constructed, and fitted in the lanthorn as to render it practically impossible for the lamp to be accidentally or carelessly placed in, or to shift to, any position other than that which it would occupy when the foregoing conditions are fulfilled.

When two lamps, one for paraffin and the other for colza, are supplied with a lanthorn, the base plate of the lamps should be alike, and should occupy one and the same part of the lanthorn when the lamps are in their proper position. Lanthorns with means for placing the lamps at different heights should not be passed. The same lamp should not be passed for both paraffin and colza.

13. The wicks of paraffin lamps should not be less than 1 inch, and those of colza lamps not less than $1\frac{3}{4}$ inches in breadth. The wick-holder should be placed in the position of greatest efficiency, and means should be provided for preventing it from being accidentally or carelessly put in, or moved to, any other position.

The objects of this requirement are twofold, viz. (1) to preserve the efficiency of the lamp and (2) to insure the constancy of the angle at which the most divergent ray crosses ahead of the vessel. The wicks of anchor lights should not be less than $1\frac{1}{4}$ inches broad for oil and $\frac{3}{4}$ inch for paraffin.

14. When lamps are fitted with glass chimneys, these should be of plain white glass of the best quality and form, and there should be at least five spare ones on board for each lamp carried.

15. A substantial metal spherical reflector, silver plated and highly polished, should be fitted to each lamp, its horizontal axis should be in the same plane as the horizontal axis of the lens, the radius which describes the arc should be measured from the centre of the flame, and its length ascertained in the same manner as that of the lens, *i.e.*,

$$\frac{\frac{a^2}{v}+v}{2}=r.$$

If these instructions are complied with, the centre of curvature of the lens, the centre of curvature of the reflector, and the centre of the flame will be in the same line, both vertically and horizontally.

There is considerable difference of opinion amongst lamp-makers as to the most desirable size for reflectors, but they should not be so small that a line drawn from any part of the lens through the centre of the flame should fail to fall on its surface, and they should never be so large as to intercept any of the direct rays falling on the lens.

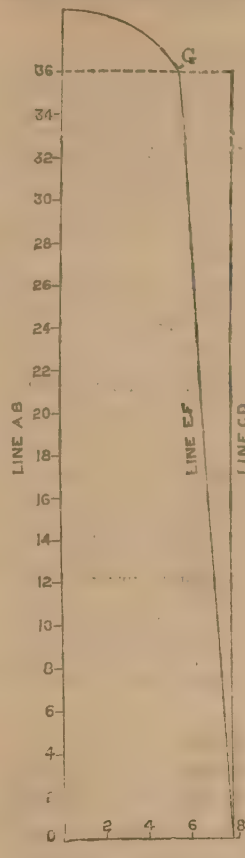
Means should be provided for preventing the lamp from being placed in the lanthorn with the reflector shipped, but not in its proper position.

16. Side-lights are always to be screened to an angle of 4° and are to be fitted as follows, excepting when in turrets, in which case it may be thought desirable so to arrange the screens as to dispense with chocks, *see* Plate II. When the screens are fitted as in Figs. 3 and 4, Plate III., the outer wall of the screen is to be considered as the chock.

In screens fitted previously to the issue of these instructions which exceed 36 inches in length, the distance at G from the line C D will be the length of the screen in inches × ·07.

When the screens are of wood, they should be well seasoned, and not less than $1\frac{1}{4}$ inches in thickness; the chock should be at least 2 inches in thickness, and rounded off, as shown in Figs. 1 and 2, Plate III.

The screens are never to be secured to the rigging except in the cases referred to in paragraph 20; when the screens are attached to movable davits or to outriggers extending outwards over the sides of the vessel they should be fitted with stop pins or distance rods, so contrived and arranged that when the stop pins are in their places the screens will be parallel with the middle line of the vessel. When the davits or stanchions for supporting the screens go through the top-gallant or main rail they should be carried down into sockets on the covering board or water-way, and have a nut or cotter under the rail to keep them in position.




Line A B represents the outer surface of screen, which is always to be 36 inches in length measured from a line passing transversely through the outer edge of wick. The screen and the measurement must be in a line parallel to the keel.

Line C D is a line drawn parallel to A B at a distance equal to the distance between the outer edge of the screen and the outer edge of the wick.

Line E F is a line projected from the outer edge of the wick at an angle of 4° measured from a line C D parallel to the vessel's keel.

Its distance from the line C D at G will always be 2·5 inches. Its distance at G from the line A B will always be equal to the required depth of the chock. The diagram represents the starboard lamp.

The screen should be so placed that the lights as screened to an angle of 4° will not be obscured by any of the fittings of the vessel, such as catheads, boats, boats' davits, sails, rigging, &c., or by passengers or crew moving or standing about forward of the lights. To insure this, the lights should be placed as far forward as practicable, and in vessels of very fine entrance where it may not be possible to carry them far forward, great care should be taken that the rays are not thrown so far inboard that persons can intercept them, remembering that the waterway main rail and stanchions are some protection. If the lights are of a sufficient height above the deck to protect them in this respect, no exception need be taken, otherwise either their height should be increased or they should be placed on properly constructed outriggers at the necessary distance outboard of the vessel. Lighthouse towers should be carefully noted in this respect, and in the case of new vessels any requisite alterations should be suggested by the surveyors before they are too far advanced.

Towers.

17. Towers should be as far forward in the ship as may be practicable, and if they will not then comply with the foregoing conditions their height must be increased until they do.

Their windows should be made of thin white glass of the best quality; they should be of such length and height as to admit of the lights showing in the manner required by the Regulations.

Windows consisting of two or three panes may be passed if the mullion or mullions are set at an angle of 45° from the vertical and do not exceed $\frac{3}{8}$ of an inch in width.

To enable the side lights in towers to show the two miles required by the regulations, it is probable they will require to have greater illuminating power than those carried in the ordinary manner.

Gimbals.

18. When side lights are hung on gimbals, the points of suspension of the latter should be in the same horizontal plane as the centre of the lens, in order that the angle at which the most divergent rays cross each other may be practically constant.

Oscillating screens.

19. The oscillating screens shown in Plate V. are considered preferable to gimbals, except for vessels in which the change of fore and aft trim is exceptionally

APP. 2, Nos. 1 and 2.

great. When the lamps are carried either by gimbals or oscillating screens the concentration of the lenses may be carried to a greater extent than is thought desirable for fixed lamps.

Lights in the rigging.

20. When trawlers and other sailing vessels whose gross registered tonnage does not exceed 80 tons cannot with safety and convenience of working carry their side lights on stanchions, they may be carried in the rigging, provided the surveyors are satisfied that they are so fitted as to show the lights for the distance and in the direction required by the regulations. This is not to be allowed in the case of steamers, and surveyors are to do their best to insure the side lights of all vessels of 200 tons or over being carried well forward of the midship section of the ship.

Vessels to be detained unless lights show as required by the Regulations.

21. In the event of the master or owner neglecting or refusing to alter the position of the lanthorns in such a way as to enable them to comply with the Regulations, the surveyor or inspector may report the fact to the collector of customs for the purpose of stopping the ship, and such collector may refuse to grant the vessel a clearance under section 30 of the Merchant Shipping Act Amendment Act, 1862, until he receives a report from the surveyor or inspector to the effect that his requirements have been complied with.

Consequences of altering lights when surveyor has passed them.

22. If after a vessel has been passed by such surveyor or inspector as carrying lanthorns and lights properly constructed and fixed, the master fixes them in such a position that they may be or are obscured so that they are not under all circumstances visible for a distance of two miles from right ahead to two points abaft the beam, on the respective sides, as required by Article 3 read in connexion with Article 24 of the Regulations, such master will be guilty of a misdemeanor under section 27 of the Merchant Shipping Act Amendment Act, 1862.

*Mast-head Light.*

Mast-head light in steamers.

23. The surveyors are to be careful to see that every steamer has fittings for the lanthorn for the white light "at the foremast-head," or elsewhere in front of the foremast-head on an independent stay, fitted with a fork and a piece of metal tube running up the stay to carry the fork; and secondly, to see that the light will show for the distance and in the direction required by the Regulations. Surveyors are not to advise owners how to arrange or modify sails, but are to decline declarations if the Regulations are not complied with. The surveyors are, if they think it necessary, to see the sails set. They are to go aloft to the mast-head in all cases before they give their declarations. Where a surveyor is from any cause unfit or unable to go aloft himself, he should not give a declaration unless one of his colleagues goes aloft for him and in his presence.

The rules regarding the wicks, wickholders, and position of the luminous part of the flame of side lights apply equally to mast-head lights.

*Electric Lights.*

Electric side and mast-head lights.

24. The Board of Trade are advised that ships' electric side and mast-head lights are not contrary to the International Regulations for Preventing Collisions at Sea, provided they are so constructed, fitted, and arranged as to show for the distances and in the directions and over the arcs required by the Regulations. But in all cases where the electric light is so fitted, it is the duty of the Board's surveyors to see that oil lamps for use in case of failure of the electric system are also provided and comply with the Regulations.

The power and character of the mast-head electric light should not be such as to give it the character or appearance of a shore light. Too strong a white light may, in the opinion of the Board of Trade, often be misleading, and therefore a source of danger to ships seeing it.

The preceding rules, &c., regarding the lenses, reflectors, screens, and screening of ordinary side lights, apply equally to electric lights.

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No. 2.—SUMMARY of REPORTS by the PRINCIPAL OFFICERS of the BOARD OF TRADE, as to the ANGLE to which SIDE LIGHTS were screened prior to being re-screened in accordance with the INSTRUCTIONS of 1892.

**Leith District.**—Many found screened to 4°; others vary slightly, the angle being greater than 4° in some cases, and less in others. The rule appears to ensure uniformity not to cause change.

Reports by individual surveyors:—

*Mr. Lewis.*—In some cases no alteration required. In others angle was over 4°.

*Mr. Paxton.*—In many cases angle was 4°, in others it was either over or under 4°.

*Mr. Peacock.*—Nearly all screens approximately comply with the 4° rule. Where alteration has been required, the angle has generally been diminished.

*Mr. Wilkins and Mr. Barnet.*—In many cases only slight alteration required, and in these the angle was invariably diminished,

**Shields District.**—Generally the angle varied from 4° to 6°, according to the size of the lamp and the length of the screen. In some cases it varied from 1¼° to 10°.

Reports by individual surveyors:—

*Mr. Jackson and Mr. Marshall.*—Seventeen ships inspected; mean angle 4° 42′.

*Mr. Munro.*—Angle would range from 4° to 4° 45′.

*Mr. Colvill.*—Usual angle 4⅓° to 5¼°, according to the length of the screen and the relative positions of the outer edge of the wick and the inboard edge of the lens.

*Mr. Shrigley, Mr. Wotherspoon, and Mr. Hutchison.*—Angle was greater than that required by the new regulations. It was about 5° or 6°.

*Mr. Carver.*—The angle was practically the same as that required by the present rule.

*Mr. Smith.*—The lights were not formerly screened to more than 4°.

**Hull District.**—Of 371 ships which were inspected—

52·29 per cent. were screened to a larger angle than 4°.

26·95 per cent. were screened to 4°.

20·75 per cent. were screened to less than 4°.

that is to say, more than 79 per cent. were screened to 4° or over.

**London District.**—The majority of vessels were screened to 4° or over. The old instruction was a rule of thumb, and the result was dependent upon the position of the wick. In practice it was found to indicate an angle of about 4°.

From a return handed in by the Marine Superintendent of the Peninsular and Oriental Company, it appears that in 80 per cent. of their vessels the lights were screened to 4° or over.

**Plymouth District.**—Reports by surveyors:—

*Mr. Sparrow, Mr. Mackinlay, and Mr. Holman.*—In most cases the angle was about 4°; in a few cases a little less.

**Cardiff District.**—In the great majority of cases the angle was diminished when the lights were re-screened. It appears that only about 12 or 13 per cent. of the vessels inspected were screened to less than 4°. In the remaining 87 or 88 per cent. the angle varied from 4° to 6°; in some instances it was as much as 8° or 9°.

From a statement handed in by one of the masters of the Lambton fleet of colliers, it appears that in every one of their 27 vessels, the angle of screening was reduced.

**Liverpool District.**—Of 369 vessels inspected—

115 or 31·2 per cent. were over 4°.

90 or 24·4 per cent. were at 4°.

161 or 43·6 per cent. were under 4°.

In three cases the lights diverged.

*Result.*—More than 55 per cent. were screened to 4° or over.

**Glasgow District.**—No record kept.

In almost every case some slight alteration was required; sometimes the angle was increased, sometimes diminished. In several instances the angle was greater than 4°, and in some it was as much as 8°.

## No. 3.—Form of Report formerly made to Board of Trade by Officers testing Ships' Lights.

*See Question* 81.

*Name and Address of Maker of Lanthorns.*

| Name. | Address. |
|---|---|
| | |

*Description of Lanthorns.*

| Particulars. | For Red Side Light. | For Green Side Light. |
|---|---|---|
| 1. Height of sides, exclusive of curve of top, and exclusive of chimney. | Inches. | Inches. |
| 2. Length of sides of Lanthorn | Inches. | Inches. |
| 3. If circular, diameter - { | Inches. | Inches. |
| | Inches. | Inches. |
| 4. Whether to burn oil, paraffin, or candles. | | |
| 5. Size of wick. If candles, number of wicks. | | |
| 6. Description of lens - - | | |
| 7. Lens, whether surface is plain or corrugated. | | |
| 8. Whether the corrugations are horizontal, or vertical, or both. | | |
| 9. Thickness of lens at thickest part. | Inches. | Inches. |
| 10. Thickness of lens at thinnest part. | Inches. | Inches. |
| 11. Length of chord made by arc of lens (lengthways). | Inches. | Inches. |
| 12. Height of lens - - - | Inches. | Inches. |
| 13. Add any other particulars. | | |

By whom signed _____

Date _____

*Report.*

| | | Red Side Light. | Green Side Light. |
|---|---|---|---|
| Is the light visible at a distance of two miles on a dark night with a clear atmosphere? | Ahead - - | | |
| | One point - - - | | |
| | Two points - - | | |
| | Three „ - - - | | |
| | Four „ - - - | | |
| | Five „ - - - | | |
| | Six „ - - - | | |
| | Seven „ - - - | | |
| | Eight „ - - - | | |
| | One point abaft the beam. | | |
| | Two points abaft the beam. | | |
| Does the light show over more than 10 points from right ahead, and, if so, how many points more? | | | |
| Is the light shown a uniform and unbroken light in colour and power over 10 points of the compass, viz., from right ahead to 2 points abaft the beam? | | | |
| If it is not uniform, in what respect is its uniformity deficient, and at what points? | | | |
| How long was the lamp lighted before commencing the trial? | | Minutes. | Minutes. |

The above is a correct report of the trial of the lanthorns described on the other side hereof.

Signed at Shoeburyness, this day of 187 .

Signature of Officer

To the Assistant Secretary,
Marine Department,
Board of Trade.

## No. 4.—Table to illustrate the cases of Steamships approaching one another on Parallel Courses.

Ships distant ¼ mile (500 yards) from each other, and bearing from the intersection of the extreme outer rays of their side lights 4°, 3°, 2°, and 1° from each other. They are in all these cases supposed to be steering parallel courses and keeping their course, no Article of the Regulations applying to them.

| 4° and 3° on each other's Bow. | | | | | 2° and 1° on each other's Bow. | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Transverse distance between the outer edges of the wicks of the two lights of each Ship. | Distance between the paths of the two Ships. | | Distance they will pass clear of one another after allowing for their half breadths. | | Transverse distance between the outer edges of the wicks of the two lights of each Ship. | Distance between the paths of the two Ships. | | Distance they will pass clear of one another after allowing for their half-breadths. | |
| | 4 | 3 | 4° | 3° | | 2° | 1° | 2° | 1° |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | |
| 30 | 89·89 | 68·61 | 59·89 | 33·61 | 30 | 37·38 | 11·19 | 7·38 | Collision. |
| 40 | 84·89 | 58·61 | 44·89 | 13·61 | 40 | 32·38 | 6·18 | Collision. | Do. |
| 50 | 79·89 | 53·62 | 29·89 | 3·62 | 50 | 27·38 | 1·18 | Do. | Do. |
| 60 | 74·89 | 48·6. | 14·89 | In collision. | 60 | 22·38 | Negative | Do. | Do. |
| 70 | 69·89 | 43·61 | In collision. | Do. | 70 | 17·38 | Do. | Do. | Do. |

APP. 2, Nos. 4 & 5.

Ships distant ½ mile (1,000 yards) from each other, and bearing from the intersection of the extreme outer rays of their side-lights 4°, 3°, 2°, and 1°. Other conditions as above.

| 4° and 3° on each other's Bow. | | | | | 2° and 1° on each other's Bow. | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Transverse distance between the outer edges of the wicks of the two lights of each Ship. | Distance between the paths of the two Ships. | | Distance they will pass clear of one another after allowing for their half-breadths. | | Transverse distance between the outer edges of the wicks of the two lights of each Ship. | Distance between the paths of the two Ships. | | Distance they will pass clear of one another after allowing for their half-breadths. | |
| | 4° | 3° | 4° | 3° | | 2° | 1° | 2° | 1° |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 194·79 | 142·23 | 164·79 | 112·23 | 30 | 89·38 | 37·37 | 59·38 | 7·37 |
| 40 | 189·79 | 137·23 | 149·79 | 97·23 | 40 | 84·38 | 32·37 | 44·38 | Collision. |
| 50 | 184·79 | 132·23 | 134·79 | 82·23 | 50 | 79·38 | 27·37 | 29·38 | Do. |
| 60 | 179·79 | 127·23 | 119·79 | 67·23 | 60 | 74·38 | 22·37 | 14·38 | Do. |
| 70 | 174·79 | 122·23 | 104·79 | 52·23 | 70 | 69·38 | 17·37 | Collision. | Do. |

The reason of the results marked negative is owing to the bearing being given from the intersection of the side lights, and consequently the bearing is that of the outer edge of the side light, and is not the bearing of the ship, and in these cases the distance to the intersection is greater than the distance between the two ships. It has been argued that no regulation is necessary for the information and guidance of shipmasters when ships are approaching one another in this manner; the same argument would equally apply to all other cases. Mr. Gray's verses, "Green to green, red to red, perfect safety, go ahead," would not apply unless the lights were screened in the manner contemplated by himself. In the cases shown above, they would mean either dangerous proximity or collision.*

D. M., 1893.

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## No. 5.—REPORT on the 1891 EXPERIMENTS by Sir D. MURRAY and Mr. SAMSON.

### *Memorandum by Sir D. Murray.*

On M. 7273–91, I obtained permission to expend 25*l.* in experiments on ships' side lights to determine:—

(1.) The angle at which it was desirable the most convergent rays of the two side lights should cross ahead of the ship.

(2.) In what manner the lights should be fitted so as to ensure their rays not being lost in the water in the immediate vicinity of the ship when the ship is listed to a considerable angle of heel.

The first experiment was tried at the Glengall Iron Works with a pair of full-sized side lights having plano-convex lenses.

The result was so unsatisfactory that I determined to stop the experiments until I could obtain a pair of lights which should be tested at Shoeburyness both for distance and depression.

I therefore obtained authority from the Board to order a pair of standard lights.

I communicated with Messrs. Harvie, of Glasgow, and ordered a pair of side lights from them subject to their fulfilling the following conditions: (1) that they should have a vertical divergence above and below the horizontal plane of 20°; (2) that, with this vertical divergence, they should show, when horizontal, the distance required by the instructions.

* *See* Plate VI.

All the mechanical arrangements for these experiments have been fitted under the superintendence of Mr. Samson, including the screening of the lights and the subsequent sighting of the screens; this has been done with the utmost care, and the following joint report of Mr. Samson and myself of the three nights trials will, by the aid of diagrams, explain clearly how this has been accomplished.

(Signed) D. MURRAY.

### *Report of Sir D. Murray and Mr. Samson.*

The two principal points on which we have to report to the Board of Trade are contained in the resolutions adopted by the Washington International Conference, viz.:—

(1.) General Division, 1–5. "The lantern should be "so constructed as to ensure the light having at "least the required minimum power in the ideal "line connecting the lantern with the horizon, even "though the vessel be heeled one way or the other "10 degrees."

(2.) General Division, 1–8. "The side lights should "be so screened as to prevent the most convergent "rays of the light being seen across the bows more "than half a point."

We will now give a detailed account of the experiments, and then make our recommendations as to what we think the Board's instructions should be to their surveyors with reference to the practice of the mercantile marine of this country.

In conducting the experiments, and in making up our minds as to the angle to which the side lights should be screened, it was necessary to determine exactly what it was that we wished to attain.

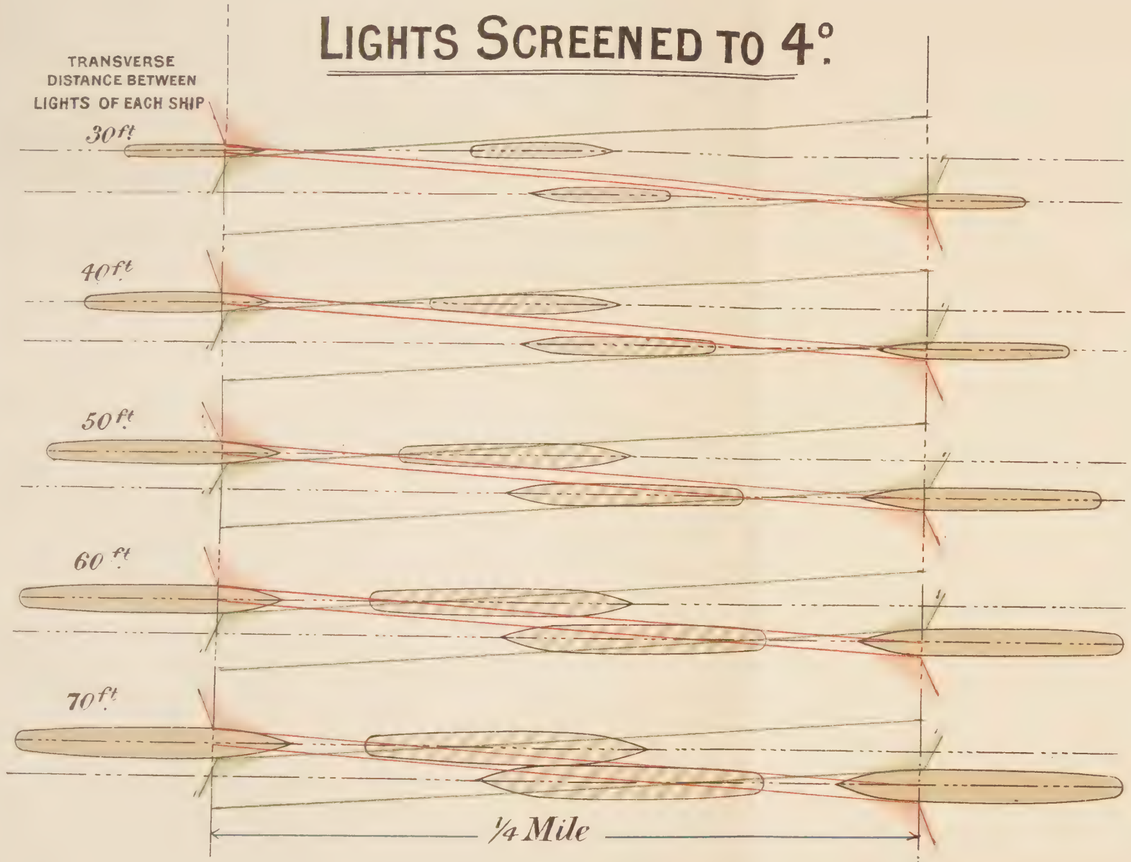
This was determined as follows: That at 200 yards forward of the intersection of the most convergent rays of the lights at the middle line the two side lights should be plainly visible to a ship approaching end on, and should practically present the same appearance to an observer, whether standing in the middle or on either side of the bridge or deck, no matter what the beam of the approaching ship might be.

The point at which the most convergent rays of the two lights will apparently cross the middle line will not agree with the theoretical distance, as both lights will apparently cross nearer than the theoretical crossing-point, the red nearer than the green; but, for all practical purposes, the theoretical crossing-point, due to the angle at which the lights are screened, may be adopted.

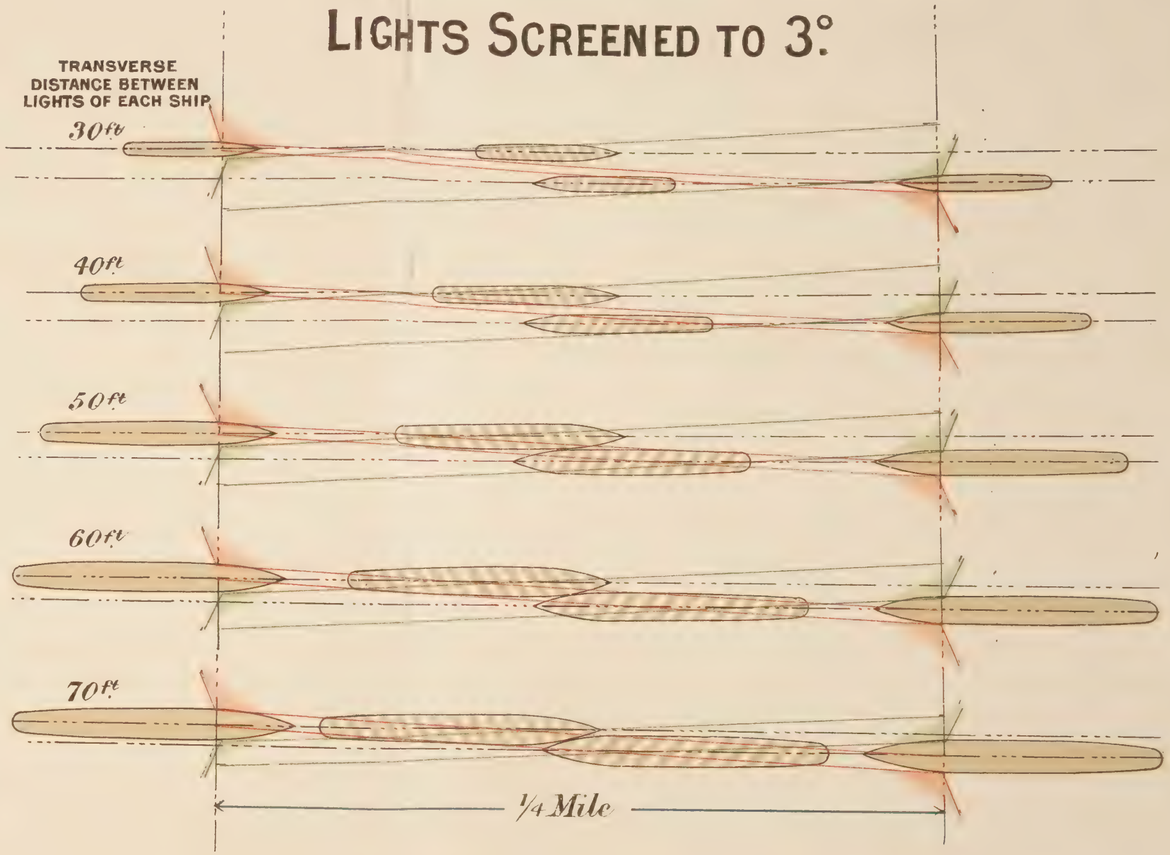
# SHIPS DISTANT ¼ MILE (500 YARDS) FROM EACH OTHER, AND BEARING FROM THE INTERSECTION OF THE EXTREME OUTER

## STEERING PARALLEL COURSES, AND KEEPING THEIR COURSE

### LIGHTS SCREENED TO 4°.

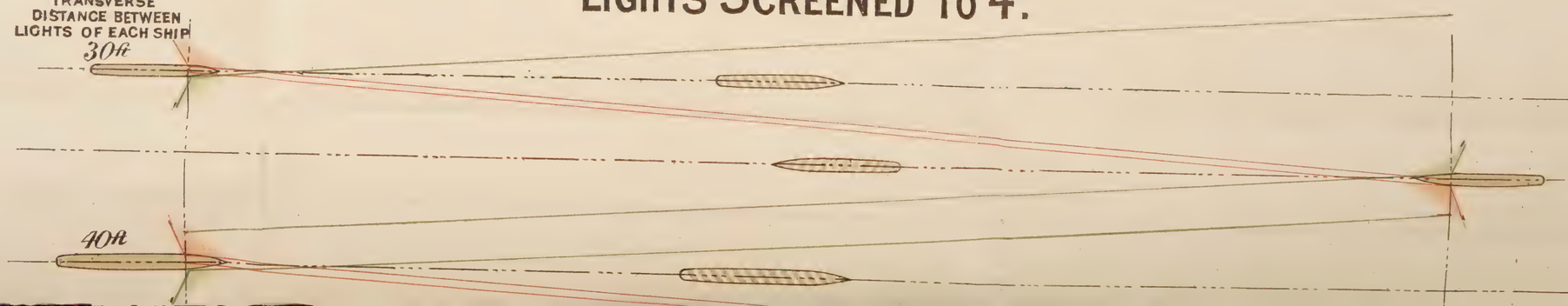



### LIGHTS SCREENED TO 3°.




## SHIPS DISTANT ½ MILE (1000 YA

### LIGHTS SCREENED TO 4°.



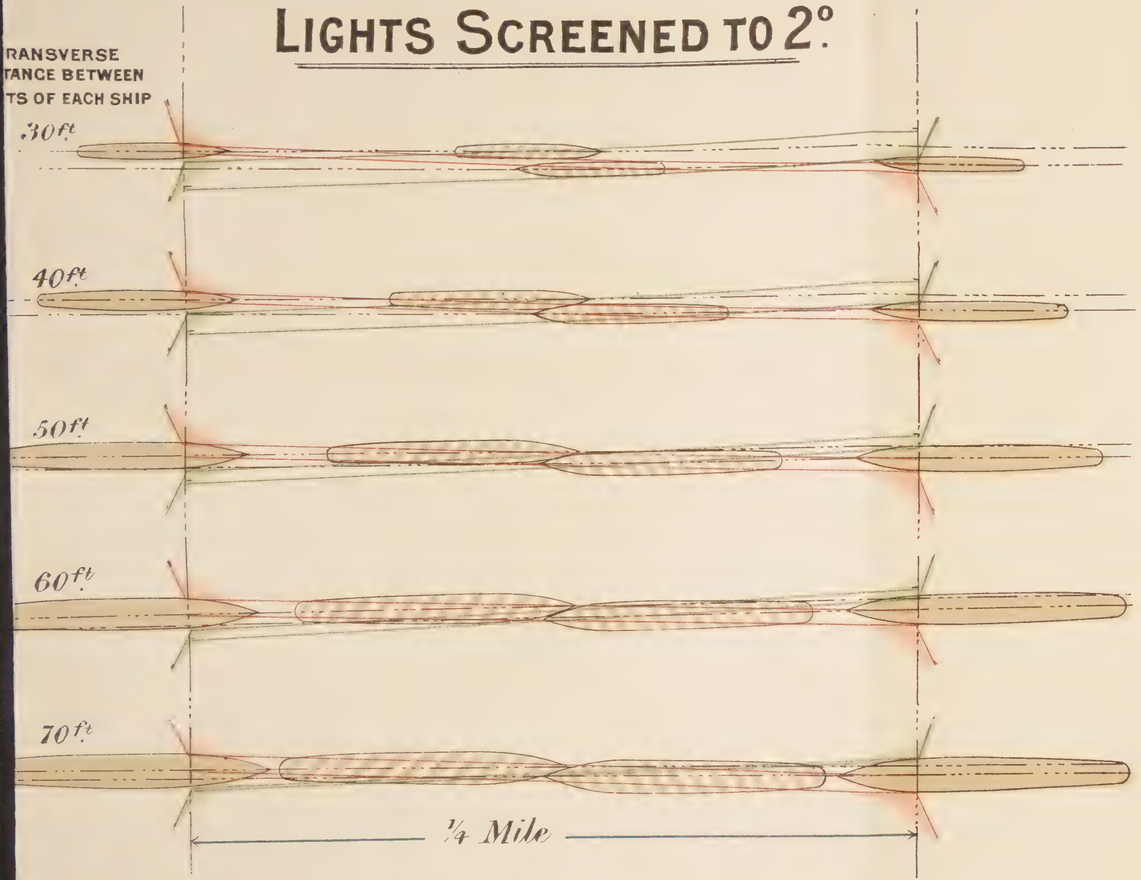

*In none of the figures shown on this diagram, can the red light be seen*

*There is*

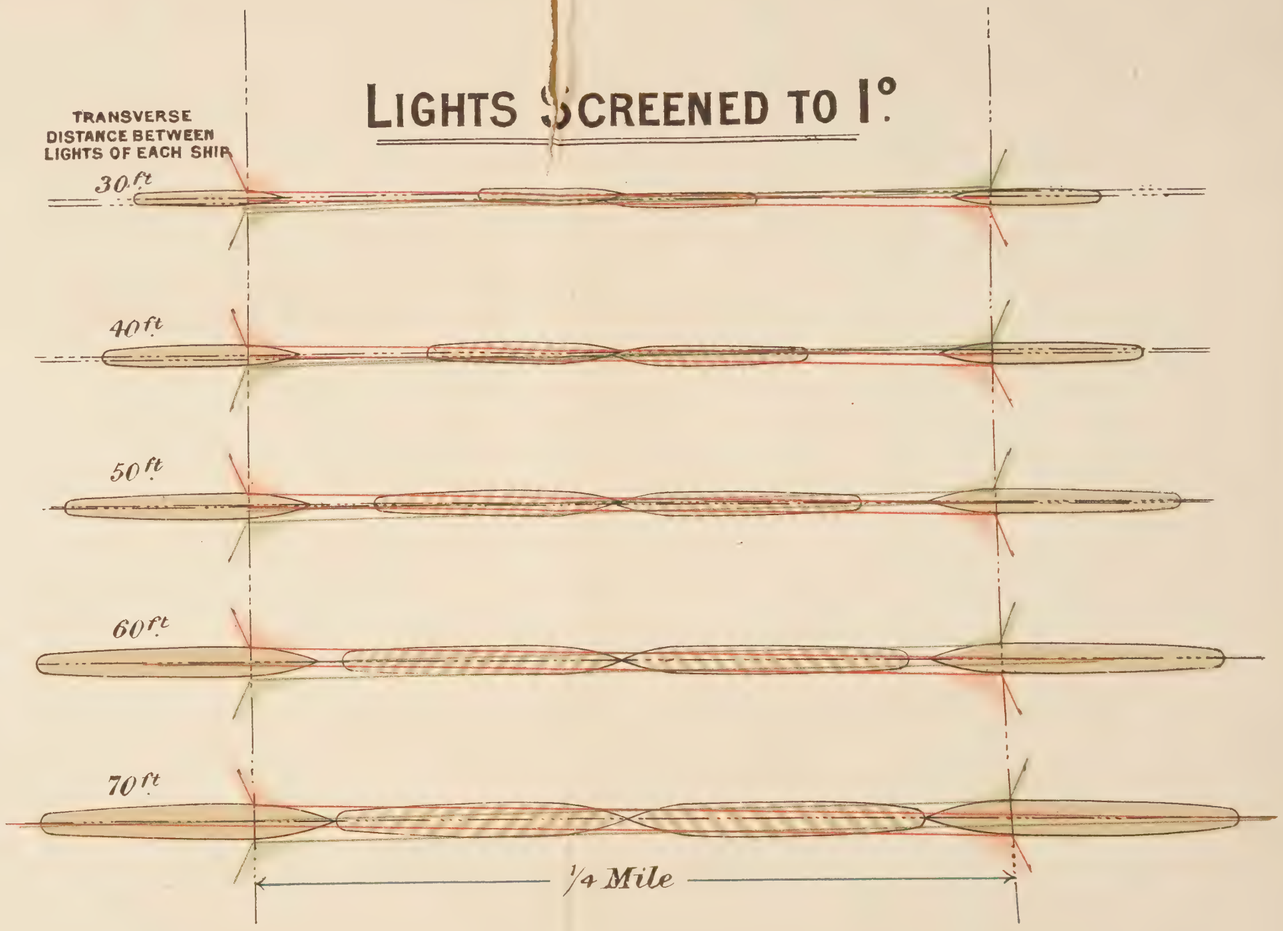
*to see bot*

RAYS OF THEIR SIDELIGHTS 4°. 3°. 2°. AND 1°. FROM EACH OTHER. THEY ARE IN AL THESE CASES SUPPOSED TO BE
, NO ARTICLE OF THE REGULATIONS APPLYING TO THEM.

## LIGHTS SCREENED TO 2°.

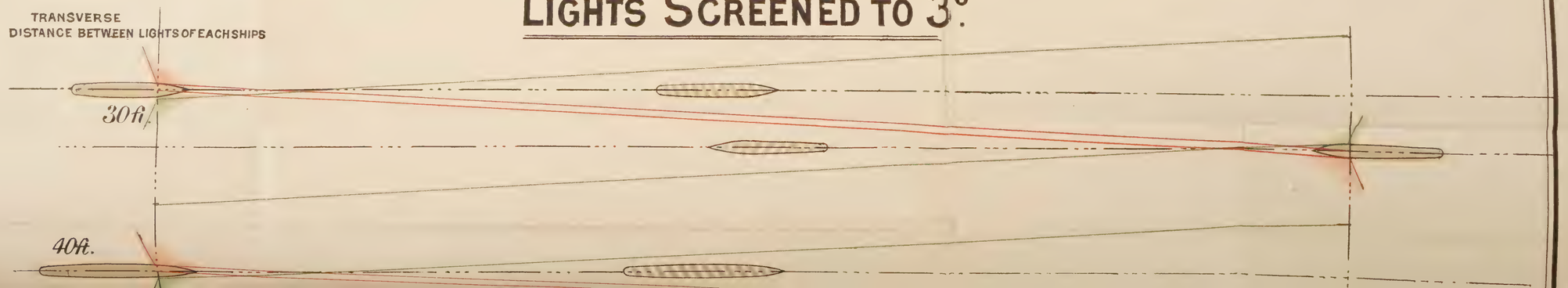



## LIGHTS SCREENED TO 1°.




RDS) FROM EACH OTHER, OTHER CONDITIONS AS ABOVE.

## LIGHTS SCREENED TO 3°.




*o time when it is more important for Steam Ships*
*of each others sidelights, than when they are*

from both sides of the bridge of the approaching ships and a very slight reduction in the bearing between the two ships would make the red light invisible.

If the lights are screened to an angle of 1° two steamships steering parallel courses and bearing from the intersection of one anothers sidelights any angle exceeding 1° on each other's starboard bow, will see each other's green lights only.

If screened to 2° on all bearings greater than 2° they will see one another's green lights only.

If screened to 3° on all bearings greater than 3° they will see one another's green lights only.

To practically test this, experiments should be carried out in such conditions of the atmosphere as would enable an observer to see the sidelights at no greater distances than are here referred to.

Former experiments tend to show that reflected light would not be visible at these distances.

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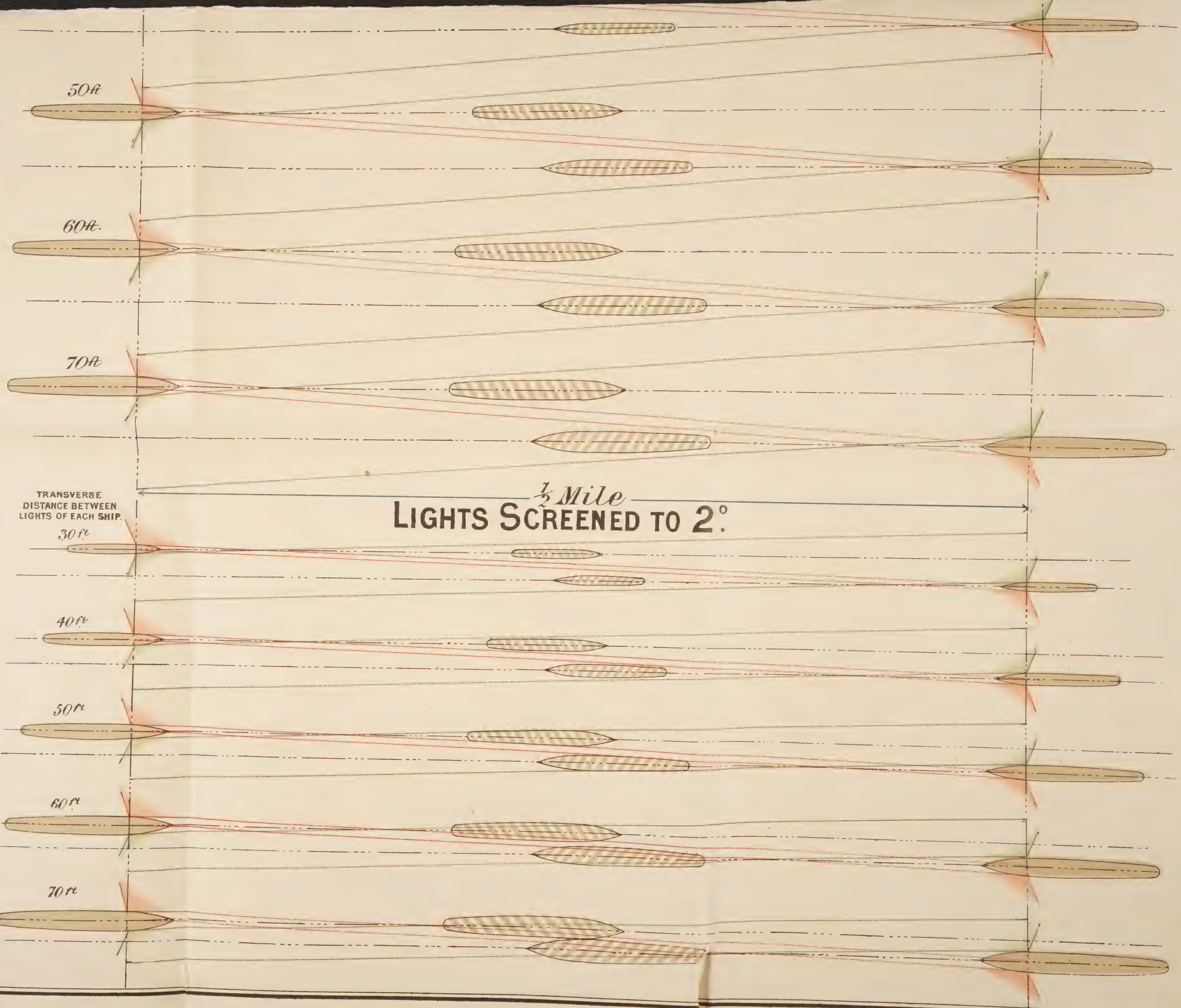


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...un, the lights cannot be discerned at greater dis-
...n from one quarter to half a mile, and it is
...tly necessary for one or both to take prompt
...avoid collision.

...am shows what would happen in the case of
...ering parallel courses having 30, 40, 50, 60 and
...ween the outer edges of the wicks of their side-
...d screened to angles of 4°. 3°. 2°. and 1°. at
...of (1) 500 yards (2) 1000 yards provided they
... their course.

...ations which apply to steamships approach-
...nother are two in number.
... steamships are meeting end on or nearly end
...o involve risk of collision each shall alter her
...starboard so that each may pass on the port
...e other. This regulation only applies by night,
... which each vessel is in such a position as
...h the sidelights of the other, and consequently
...lights are so finely screened that they cannot
...een in the positions shown in this diagram,
...lation does not apply.
... two steam vessels are crossing so as to involve
...llision, the vessel which has the other on her
...oard side shall keep out of the way of the other.
... shown in the diagram are not crossing ves-
... they are both on the starboard side of one
... this regulation does not apply. No regulation

...een, Red to Red, perfect safety go ahead," does
...he case, and as this maxim has been con-
...orrect for some 25 years it would be
...leading.

D. Murray

50ft.

60ft

70ft.

$\frac{1}{2}$ Mile.

TRANSVERSE DISTANCE BETWEEN LIGHTS OF EACH SHIP

## LIGHTS SCREENED TO 1°.

30ft

40ft

50ft

60ft

70ft

Wyman & Sons Ltd Lith 7/85 5 95

RESULTS of EXPERIMENTS made at the GLENGALL IRON WORKS, MILLWALL, on 5th May 1891.

Both Lamps screened to 3°.

The words right or left mean to an observer's right or left when looking towards the lights.

| 1. | 2. | | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|
| Distance from outside edge of Work of Port Lamp to corresponding edge of Work of Starboard Lamp. | Distance from the Lamps to a point on Centre Line where the Light was just visible. | | Distance from the Lamps to a Point on Centre Line at which the most convergent rays of the Lights crossed (Theoretical). | Distance from the Lamps to a point (A) on Centre Line at which both Lights were distinctly visible. | Distance from A to point on right of A at which the Green Light was invisible. | Distance from A to point on left of A at which the Red Light was invisible. | Distance from a point (C) on Centre Line 840 feet from the Lamps to point on right of Cat which the Green Light was invisible. | Distance from a point (C) on Centre Line 840 feet from the Lamps to point on left of Cat which the Red Light was invisible. |
| | Red. | Green. | | | | | | |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 105 | 272 | 285 | 300 | 4 | 25 | 17 | 36 |

Green Lamp screened to 3° 24′. Red Lamp screened to 3°.

| 1. | 2. | | 3. | 4. | 5. | 6. | 7. | 8. |
|---|---|---|---|---|---|---|---|---|
| Distance from outside edge of Work of Port Lamp to corresponding edge of Work of Starboard Lamp. | Distance from the Lamps to a point on Centre Line where the Light was just visible. | | Distance from the Lamps to a point on Centre Line at which the most convergent rays of the Lights crossed (Theoretical). | Distance from the Lamps to a point (A) on Centre Line at which both Lights were distinctly visible. | Distance from A to point on right of A at which the Green light was invisible. | Distance from A to point on left of A at which the Red Light was invisible. | Distance from a point (B) on Centre Line 650 feet from the Lamps to point on right of B at which the Green Light was invisible. | Distance from a point (B) on Centre Line 650 feet from the Lamps to point on left of B at which the Red Light was invisible. |
| | Red. | Green. | | | | | | |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 105 | 200 | 285 | 291 | 7½ | Not taken. | 24 | 33 |

*Remarks on the Experiments at the Glengall Iron Works.*

The lights were extremely faint long before they became for all practical purposes invisible, and they did not show plainly, and the green light not at all, even at the theoretical distance from the middle line due to the angle at which they were screened. Columns 7 and 8.

These experiments show that if a ship of from 30 to 60 ft. beam was directly approaching these lights at a distance of 600 ft. from their intersection, or 885 ft. from the lights, they would present a different appearance to observers stationed on the starboard side, in the middle, and on the port side of the bridge.

That the experiments were not made at the exact distance of 600 ft. from the intersection of the rays of the two lights was owing to the space at our disposal at the Glengall Iron Works being insufficient.

We have every reason to believe that lights are screened to as small an angle as 3°, indeed we have a diagram sent by one maker showing the lights screened to a still smaller angle.

It may possibly answer in some cases, but we are of opinion that so small an angle is undesirable, and as a general instruction would be unsafe.

In the foregoing experiments the screens were sighted by a small lantern hung alternately 15 ft. on each side of the middle line at a distance of about 680 ft. from the side lights.

*Trial of a pair of Side lights having dioptric lenses (and stated by the makers, Messrs. Harvie, to have a vertical divergence* of 20°) when screened to an angle of 4° and placed 30 ft. apart.*

At 1,200 ft. from the lights, or 985 ft. from the theoretical point of intersection of the most convergent rays of the two lights forward of the ship, the red light became so faint as to be practically invisible at 110 ft. 6 ins. to the left of the middle line when facing the lamps. Green became practically invisible at 66 ft. 5 ins. to the right of the middle line.

At 815 ft. from the lights, or 600 ft. from the theoretical point of intersection of the most convergent rays of the two lights, the red light became practically invisible at 104 ft. 5 ins. to the left of the middle line. The green light became practically invisible at 73 ft. 7 ins. to the right of the middle line.

These experiments appeared to differ so materially from those obtained at the Glengall Iron Works, that it was thought desirable to try another pair of lights, and a pair of full-sized lights, having dioptric lenses, were selected from those in stock at Shoeburyness, and the screens were altered to fit them.

When screened to an angle of 4° they gave the following results:—

At 1,200 ft., 985 ft. from their intersection, the red light became practically invisible at 134 ft. 3 ins. to the left of the middle line. The green light became practically invisible at 42 ft. 3 ins. to the right of the middle line.

At 815 ft. from the lights, or 600 ft. from their intersection, red became practically invisible at 98 ft. 9 ins. to the left of the middle line. Green became practically invisible at 43 ft. 9 ins. to the right of the middle line.

These distances were carefully noted by three observers, although it is obvious that either varying conditions of the atmosphere, or the difficulty of determining the exact point at which a light becomes practically invisible, have affected the results, and probably if the same experiments were tried on some other night, the distances, owing to atmospheric and other causes, would be found to differ somewhat from the present ones.

It is also clear that the character of the green light will in all cases greatly affect the result.

*Trial of Messrs. Harvie's Lights for Distance and Depression.*

The night was not particularly favourable to the lights, for although apparently clear, light mist was occasionally swept across between the observers and the lamps, as indicated by their varying brilliancy.

At a distance of two statute miles both lights were visible, but the green was faint.

At 4,002 yards, red was plainly visible to the naked eye; green was barely visible, but plainly seen through binoculars.

On moving 286 yards to the left of the middle line, *i.e.*, when looking towards the lights, red became invisible, the green being fairly visible.

On moving 225 yards to the right, green became practically invisible, the red being plainly visible.

Depression.

The green light at 0° broadside on to the observer was very distinct.

The green light was depressed to 20°, the observers remaining at the same distance, viz., 4,002 yards.

At this angle and distance, it was invisible even when looked for with binoculars.

* The divergence was tested by the makers by a ground glass screen in a darkened room.

When depressed to an angle of 15°, it became visible to the naked eye to two out of three of the observers.

At a distance of two statute miles, the green was visible to the naked eye at 15°, and through binoculars when depressed to 18°.

At 1½ statute miles, the green light was just visible to the naked eye when depressed to 18°, and plainly at 15°.

At 2,100 yards, the green was just visible to the naked eye, when depressed to an angle of 20°.

The green light was placed on the end of a movable arm, so fitted as to keep the light, when depressed to an angle of 20°, 5 ft. above the sand, or about the height of an observer's eye, when seated in the artillery waggon. It was also broadside on to the observers.

We consider the foregoing results are very satisfactory. At the time of the former experiments at Shoeburyness in April 1880, it was thought useless to test the side lights for elevation and depression at a greater distance than 1,000 yards; these experiments show a marked progress.

It was not practicable to carry out any further observations in the time at our disposal, which was limited by the tide, but experiments previously carried out at Shoeburyness show that the angles selected were the most crucial ones, and we think they are sufficient for our purposes.

*Recommendations.*

(1.) General Division 1–5 of the resolutions of the Washington International Conference:—

"The lantern should be so constructed as to ensure the light having at least the required minimum power in the ideal line connecting the lantern with the horizon, even though the vessel be heeled one way or the other 10°."

Many merchant steamships, when their coal is nearly consumed, especially when grain-laden, list as much as 20°, and some very narrow ships have been known to reach the Mersey with as great a list as 23°.

We are, therefore, of opinion that the side-lights should either be so constructed as to have a vertical divergence both above and below the horizontal plane of 20°, in which case the least powerful of the two lights—the green—when depressed to an angle of 20° should be visible to the naked eye at a distance of one sea mile, or else the lights should be hung in gimbals. *See* Diagrams and explanations at the end of our Report.

(2.) General Division 1–8 of the resolutions of the Washington International Conference:—

"The side lights should be so screened as to prevent the most convergent rays of the light being seen across the bows more than half a point."

In carrying out experiments to determine the angle at which the lights should be screened, it was most difficult to distinguish between the true rays of the light and the reflected rays. It is obvious that the true rays, as distinguished from the reflected rays, cannot be seen at a greater distance from any point of the middle line than that which is due to the angle at which the light is screened, and the theoretical distance is probably for all practical purposes correct so far as the red light is concerned, though the light will appear bright to a greater distance, and the reflection at a distance of 600 ft. from the theoretical intersection of the rays of the two lights will be visible to considerably more than twice that distance.

With the green light this does not appear to be the case. The light and its reflection are much fainter than is the case with the red, and its rays are not visible so near to the ship as the red.

We are of opinion that the lights should not be screened to a smaller angle than 4° each, and even then great care will have to be taken to ensure the quality of the green light.

To try the distance at which this light can be seen on the opposite side of the middle line at a distance of 600 ft. from the intersection of the lights will probably afford the makers quite as much information as to the quality of the light as the long-distance test would.

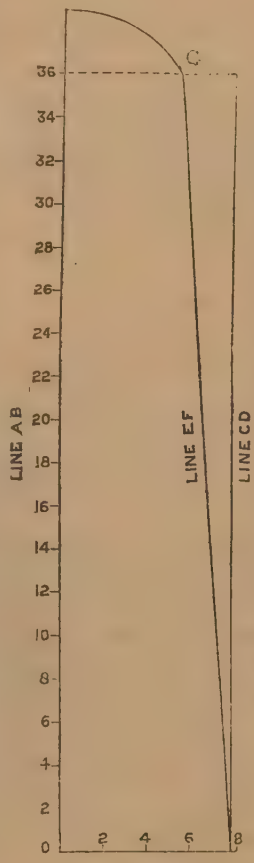
It would not be necessary for them to test every pair of lamps, but only one pair of each pattern they manufacture, provided always that the colour and quality of the glass was the same.

As it is important that all lights carried by vessels belonging to the Mercantile Marine of this country should be screened in exactly the same manner, especially having regard to uniformity of practice on the part of the Board's surveyors, we attach diagrams and explanations showing clearly how this is to be done, and if this Report is approved of, they will be embodied in the instructions.

*Instructions as to the manner in which the Side lights of Merchant Ships and Steamships are to be screened.*

They are always to be fitted as follows, excepting when in turrets, in which case it may be thought desirable so to arrange the screens as to dispense with chocks:—

Scale, ¼ inch = 2 inches.




Line AB represents the outer surface of screen which is always to be 36 inches in length forward of a line passing transversely through the outer edge of wick. It must be in a line parallel to the keel.

Line CD is a line drawn parallel to AB at a distance equal to the distance between the outer edge of the screen and the outer edge of the wick.

Line EF is a line projected from the outer edge of the wick at an angle of 4°, measured from a line, CD, parallel to the vessel's keel.

Its distance at G from the line CD will always be 2·5 inches.*

Its distance at G from the line AB will always be equal to the required depth of the chock.

The diagram represents the starboard lamp.

(Signed) D. MURRAY.
P. SAMSON.

*List of Diagrams attached to the Report.*

1. Diagram showing the distance from the lights (when screened to an angle of 4°) at which their most convergent rays cross the middle line forward of the lights, varying with the distance between the outside of the wicks on one side of the ship to the outside of the wicks on the other side of the ship. (*See* Plate IV.)

2. Diagrams showing how Messrs. Harvie's lights were screened at the trials at Shoeburyness.

3. Diagram and explanations as to the hanging of side lights in gimbals, and also of fitting them so that the screens may adapt themselves to the heel of the ship. (*See* Plate V.)

4. Diagram showing the screening of side lights to an angle of 4° when hung in the ordinary position. (*See* Plate III.)

5. Diagram showing how lights may be screened in turrets to an angle of 4°. (*See* Plate II.)

* 2·5 inches would appear to be exact enough for all practical purposes, but if carried to another place of decimals it would be 2·52.

## Result of previous Experiments with Side Lights at Shoeburyness to determine their Visibility at different Degrees of Elevation and Depression.

### Result of Trial of Ships' Side Lights at Short Ranges in Marsh in presence of Representatives of Board of Trade and Admiralty.

*Dioptric.*

| Date. | Mark on Lamp. | Port or Starboard. | Description of Lens. | Oil used. | Time when Lighted. | Distance from Lamp to Observer. | Angle of Depression or Elevation. | Appearance of Light to the Observer. | | | | | | | | | | | | | Time occupied in Experiment. | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Points from Ahead. | | | | | | | | | Points abaft the Beam. | | | | Commence. | Complete. | |
| | | | | | | | | Ahead. | 1. | 2. | 3. | 4. | 5. | 6. | 7. | Abeam 8. | 1. | 2. | 3. | 4. | | | |
| | | | | | | Yds. | | | | | | | | | | | | | | | H. M. | H. M. | |
| 1880. April 19 | P 5 | Port | Dioptric | Paraffin | Lighted at 7 o'clock p.m. and turned down until shortly before trial | 200 | 25° Depn. | Fair | Fair | Fair | Fair | Inv. | Faint | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Inv. | Inv. | Fair | Fair | Fair | Faint | Faint | Faint | Faint | Bar. vis. | Bar. vis. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Inv. | Fair | Good | Good | Good | Good | Good | Fair | Fair | Fair | Fair | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | 8 50 | 9 15 | |
| | | | | | | ,, | 10° Elevn. | Fair | Good | Good | Good | Good | Good | Good | Good | Fair | Fair | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Fair | Good | Good | Good | Good | Good | Good | Fair | Fair | Fair | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 25° ,, | Fair | Good | Good | Good | Good | Fair | Fair | Fair | Faint | Faint | Faint | Bar. vis. | Inv. | | | |
| | | | | | | 400 | 25° Depn. | Inv. | Fair | Faint | Faint | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Good | Fair | Fair | Fair | Faint | Bar. vis. | Bar. vis. | Inv. | Inv. | Bar. vis. | Bar. vis. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Inv. | Good | Good | Fair | Fair | Fair | Bar. vis. | Bar. vis. | Fair | Fair | Fair | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Fair | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | 9 20 | 9 34 | |
| | | | | | | ,, | 10° Elevn. | Fair | Good | Good | Good | Good | Good | Fair | Fair | Fair | Fair | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Good | Good | Good | Good | Good | Good | Fair | Fair | Faint | Faint | Faint | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 25° ,, | Fair | Good | Good | Good | Good | Good | Fair | Faint | Faint | Faint | Faint | Bar. vis. | Inv. | | | |
| | | | | | | 600 | 25° Depn. | Fair | Fair | Faint | Faint | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Fair | Good | Fair | Faint | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Fair | Good | Good | Good | Faint | Faint | Faint | Faint | Faint | Fair | Fair | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | 9 39 | 10 0 | |
| | | | | | | ,, | 10° Elevn. | Faint | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Inv. | | | |
| | | | | | | ,, | 20 ,, | Fair | Good | Good | Good | Good | Fair | Fair | Fair | Fair | Fair | Fair | Fair | Inv. | | | |
| | | | | | | ,, | 25° ,, | Good | Good | Good | Good | Good | Good | Fair | Fair | Fair | Faint | Faint | Bar. vis. | Inv. | | | |
| | | | | | | 800 | 25° Depn. | Inv. | Good | Good | Faint | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Fair | Good | Faint | Faint | Bar. vis. | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Faint | Good | Good | Faint | Faint | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Fair | Fair | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Fair | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | 10 3 | 10 22 | |
| | | | | | | ,, | 10° Elevn. | Fair | Good | Good | Good | Good | Good | Good | Good | Fair | Fair | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Fair | Good | Good | Good | Good | Good | Fair | Fair | Faint | Faint | Faint | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 25° ,, | Fair | Good | Good | Good | Faint | Faint | Faint | Faint | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Inv. | | | |
| | | | | | | 1,000 | 25° Depn. | Fair | Fair | Bar. vis. | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Inv. | Good | Fair | Bar. vis. | Bar. vis. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Good | Good | Good | Good | Fair | Faint | Faint | Bar. vis. | Bar. vis. | Faint | Fair | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Fair | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | 10 28 | 10 50 | Lamp seemed to improve slightly at 3 and 4 points abaft the beam. |
| | | | | | | ,, | 10° Elevn. | Fair | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Fair | Good | Good | Good | Good | Good | Good | Fair | Faint | Faint | Faint | Faint | Inv. | | | |
| | | | | | | ,, | 25° ,, | Fair | Good | Good | Good | Fair | Faint | Faint | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Bar. vis. | Inv. | | | |

Shoeburyness,
20th April 1880.

(Signed) D. O'Callaghan, Capt. R.A.,
Asst. Supt. Observing Officer.

RESULT of previous EXPERIMENTS with SIDE LIGHTS at SHOEBURYNESS to determine their VISIBILITY at different DEGREES of ELEVATION and DEPRESSION.

## Result of Trial of Ships' Side Lights at Short Ranges in Marsh.

*Fish Globe.*

| Date. | Mark on Lamp. | Port or Starboard. | Description of Lens. | Oil used. | Time when Lighted. | Distance from Lamp to Observer. | At Angle of Elevation or Depression. | Appearance of Light to Observer. | | | | | | | | | | | | | Time occupied in Experiment. | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Points from Ahead. | | | | | | | | | Points abaft the Beam. | | | | | | |
| | | | | | | | | Ahead. | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8 Abeam. | 1. | 2. | 3. | 4. | Commenced. | Completed. | |
| | | | | | H. M. | Yds. | | | | | | | | | | | | | | | H. M. | H. M. | |
| | | | | | | 200 | 25° Depn. | Poor | Good | Good | Good | Good | Good | Good | Good | Fair | Fair | Poor | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Poor | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Poor | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Very good | Very good | Very good | Very good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 10° Elevn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 20° ,, | Poor | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 25° ,, | Poor | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | 400 | 25° Depn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 10° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Very good | Very good | Very good | Very good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 10° Elevn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 25° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | 600 | 25° Depn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Bar. vis. | | | |
| 1880. 26 May | P 2 | Port | Fish globe | Paraffin | p.m. 7 30 | ,, | 10° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Bar. vis. | p.m. 9 15 | a.m. 1 35 | This lamp cannot be turned up without taking the burner out, and is not of a very decided colour. |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Very good | Very good | Very good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 10° Elevn. | Fair | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Bar. vis. | | | |
| | | | | | | ,, | 25° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | 800 | 25° Depn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Very poor | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 0 | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Fair | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 10° Elevn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | | | |
| | | | | | | ,, | 25° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | 1,000 | 25° Depn. | Inv. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Poor | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Inv. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Bar. vis. | Inv. | Inv. | | | |
| | | | | | | ,, | 10° ,, | Inv. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | ,, | 0 | Inv. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | ,, | 10° Elevn. | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | ,, | 20° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |
| | | | | | | ,, | 25° ,, | Bar. vis. | Good | Good | Good | Good | Good | Good | Good | Good | Good | Good | Inv. | Inv. | | | |

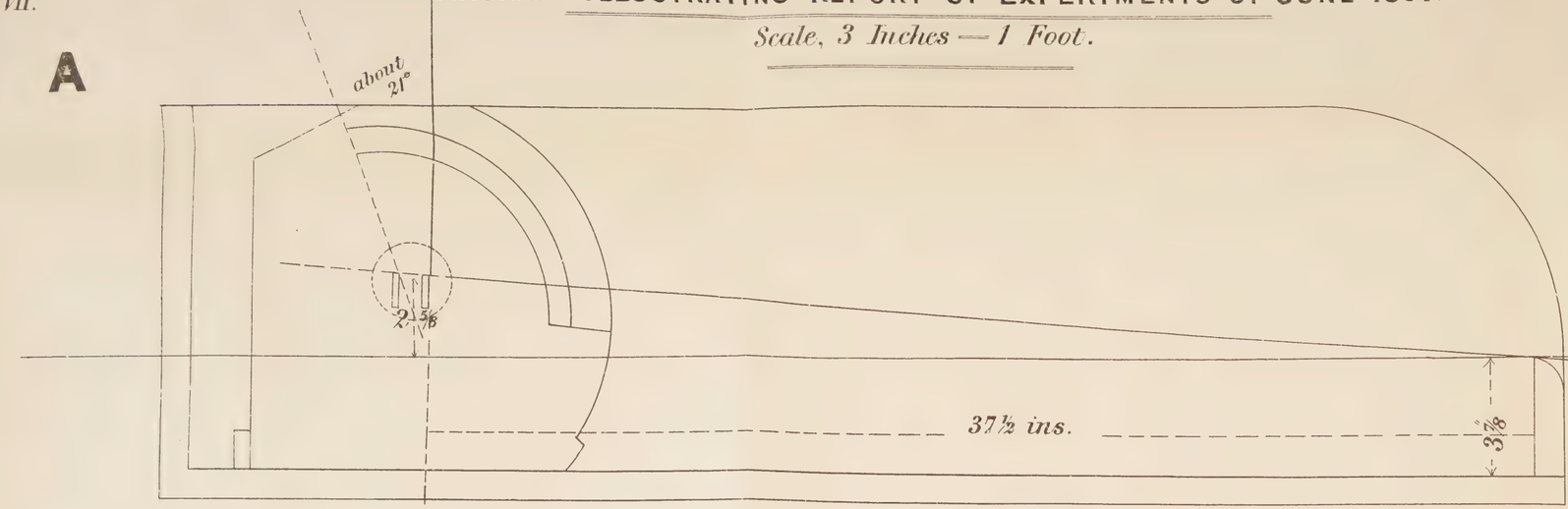
(Signed) D. O'CALLAGHAN, Capt. R.A.,
Asst. Supt. of Experiments,
Observing Officer.

# DIAGRAM ILLUSTRATING REPORT OF EXPERIMENTS OF JUNE 1891.

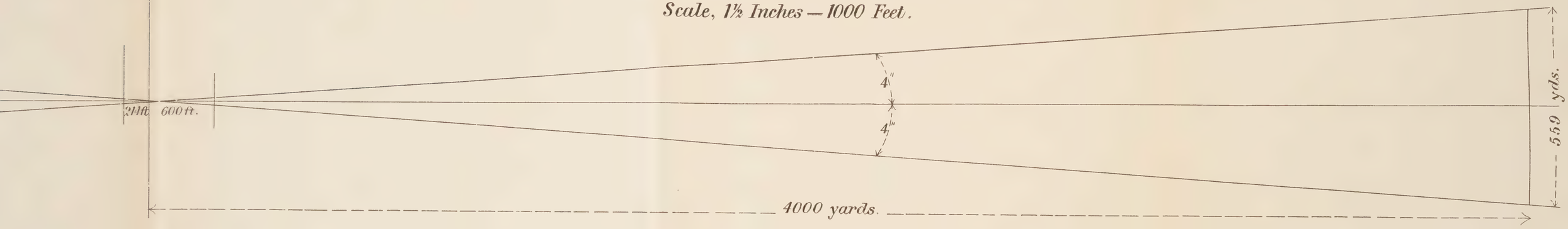
To face page 215.

*Scale, 3 Inches — 1 Foot.*

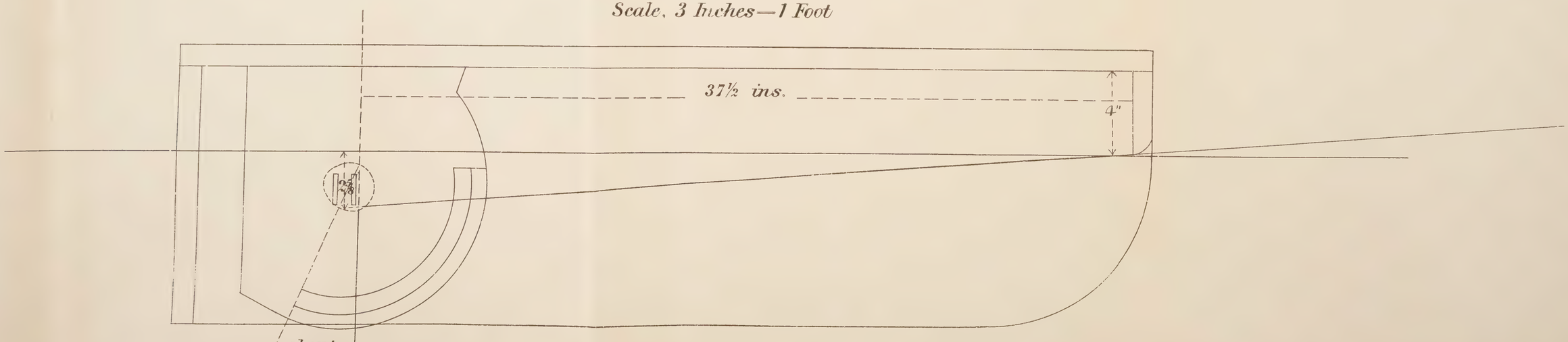
A




*Scale, 1½ Inches — 1000 Feet.*




*Scale, 3 Inches—1 Foot*



## No. 6.—Report by the Assistant Superintendent of Experiments on the 1891 Experiments.

### Experiments with Ships' Lights for Board of Trade.

Trial of Ships' Side Lights—Harvie's of Glasgow—*vide* Board of Trade Letter dated 19th May 1891, M. 10364.

Table of Results of Experiments at various Angles of Heel—Green Light showing 8 points, and long distance Tests of both Lights right ahead.

| Place. | Date. | Description of Lamps. | Port or Starboard. | Oil used. | Time when Lighted. | Distance of Lamp to Observer. | Angle of Heel. | Position of Lamps. | Distance from Centre Line at which Light became invisible. | Appearance to Observers Ahead. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shoeburyness. | 25 June 1891 | Harvie's Side Lights. | Port - - | Mineral oil | 1 hour before experiment. | 1,900 yards | — | — | — | Just visible - | Weather very misty. None light barely visible from lamp station. Sheerness lights not visible. Long distance tests postponed till following night, owing to mist. |
| | " | | Starboard - | " | " | 1,900 yards | — | — | — | Just visible - - | |
| | 26 June 1891 | " | Port - - | " | " | 4,000 yards | 0 | In screens 30′ apart screened to an angle of 4°. | — | Visible with difficulty. Both easily with binoculars. | Slightly misty. None light fairly visible. No Sheerness lights visible. No lights in Channel. As the port light decreases in visibility, the starboard light increases, and *vice versâ*. |
| | " | " | Starboard - | " | " | " | — | | — | Visible with much difficulty. Both easily with binoculars. | |
| | " | " | Port - - | " | " | | — | — | 286 yards* | — | |
| | " | " | Starboard - | " | " | | — | — | 225 yards* | — | |
| | " | " | " | " | " | | 0 | Starboard light only placed on heeling apparatus and showing at 8 points. | — | Very clear and bright, and distinctly visible. | |
| | " | " | " | " | " | " | 15° | — | — | Just visible to naked eye. | |
| | " | " | " | " | " | " | 20° | — | — | Barely visible through binoculars. | |
| | " | " | — | " | " | 3,520 yards (2 statute miles). | 15° | — | — | Visible through binoculars - | Query slight drift of mist on range; lights less visible than at 4,000 yards. |
| | " | " | — | " | " | " | 18° | — | — | Barely visible through binoculars. | |
| | " | " | — | " | " | " | 20° | — | — | Doubtful - - - | |
| | " | " | — | " | " | 2,640 yards ($1\frac{1}{2}$ statute miles). | 15° | — | — | Plainly visible to naked eye | |
| | " | " | — | " | " | " | 18° | — | — | Barely visible to naked eye | |
| | " | " | Starboard - | " | " | 2,100 yards | 20° | — | — | Just visible. | |

* The above two distances correspond to rays making at the theoretical crossing point angles with the centre line of 4° 10′ for the port light and 3° 17′ for the starboard.

(Signed) Fred. B. Elmslie, Capt. R.A.,
For Superintendent of Experiments.

App. 2, Nos. 6 and 7.

EXPERIMENTS with SHIPS' LIGHTS for BOARD OF TRADE.

TRIAL of SHIPS' SIDE LIGHTS—HARVIE'S of GLASGOW—*vide* BOARD OF TRADE LETTER dated 19th May 1891, M. 10364

TABLE of DISTANCES on each SIDE of CENTRE LINE at which LIGHTS become visible.

| Place. | Date. | Port or Starboard. | Description of Lamp. | Oil used. | Time when lighted. | Distance of Lamp to Observer. | Position of Lamp. | Distance from Centre Line at which Lights became invisible. | Remarks. |
|---|---|---|---|---|---|---|---|---|---|
| Shoeburyness. | 25 June 1891. | Port | Harvie's side lamps. | Mineral oil. | 1 hour before experiment. | 1,200 ft. | In screens 30 ft. apart from outer edge to outer edge of wicks and level with observer's eye. | 110 ft. 6 in. | Some few refracted rays from this light were apparently visible up to a distance of 125 ft. 9 in. It was extremely difficult to fix upon any definite vanishing point in these experiments, owing to these refracted rays. As the port light decreases in visibility, the starboard light increases, and *vice versâ*. |
| | | Starboard | " | " | | 1,200 ft. | | 93 ft. 5 in. | |
| | | Port | " | " | | 815 ft. | | 104 ft. 5 in. | |
| | | Starboard | " | " | | 815 ft. | | 73 ft. 7 in. | |
| | | Port | " | " | | 4,000 yds. | — | 286 yards | |
| | | Starboard | " | " | | 4,000 yds. | — | 225 yards | |
| | | *A pair of side lamps (maker's name unknown), used for comparison with above, and adjusted to same distance apart, viz., 30 ft. from outside to outside of wick.* | | | | | | | |
| | 26 June 1891. | Port | Maker's name unknown. | Mineral oil. | — | 1,200 ft. | — | 134 ft. 3 in. | |
| | | Starboard | " | " | — | 1,200 ft. | — | 42 ft. 3 in. | |
| | | Port | " | " | — | 815 ft. | — | 98 ft. 9 in. | |
| | | Starboard | " | " | — | 815 ft. | — | 43 ft. 9 in. | |

(Signed) FRED. B. ELMSLIE, Captain R.A.,
For Superintendent of Experiments.

No. 7.—MEMORANDUM by Sir DIGBY MURRAY, Bart., on the REGULATIONS as to SIDE LIGHTS. (Departmental Paper No. 179.)

Regulations as to side lights from 1862 to the present time.

The schedule to the Merchant Shipping Amendment Act, 1862, Table (*c*) requires as follows:—

Art. 3 (*b.*) On the starboard side, a green light so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least two miles:

(*c.*) On the port side, a red light so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side, and of such a character as to be visible on a dark night with a clear atmosphere at a distance of at least two miles:

(*d.*) The said green and red side-lights shall be fitted with inboard screens, projecting at least three feet forward from the light, so as to prevent these lights from being seen across the bow.

These three sub-articles have not been altered, and are still in force, but in the proposed Regulations, as agreed to at Washington and approved by the Rule of the Road Committee in London, they have been very slightly varied.

Interpretation of the foregoing sub-articles:—(*b*) and (*c*) mean that the full volume of light is to be seen from right ahead to two points abaft the beam of the ship, otherwise it is clear it would not show *an uniform* light over an arc of the horizon of 10 points of the compass.

(*d.*) Eminent counsel have pointed out that being seen across the bow means across the bow of the ship, *i.e.*, anywhere abaft the stem. I must confess that this was not my original reading of the sub-article, which I have always until recently considered to have been drafted in error; but how eminently reasonable the contention of counsel is, a little reflection will I think show. If this sub-section means that the lights shall not be seen across the path of the ship, then this sub-article is directly in contravention of sub-articles (*b*) and (*c*), Art. 3, as well as of Art. 15, to which latter the late Mr. Thomas Gray's verses apply: "When all three lights "I see ahead, I port my helm and show my red." And besides this it must be remembered that in 1862 the majority of side lights were carried well forward, and a 3-foot screen would, in most cases, prevent the lights being seen across the ship anywhere abaft the stem; but it would be an absurd enactment if it was intended to prevent the rays crossing the path of the ship; that, without a chock, would require a screen of enormous length, and a great depth of chock is very undesirable.

In the following observations I propose to consider what has been done by the Board of Trade to carry out the Regulations as regards side lights from 1868 up to the present time.

The present objections of shipowners and others appear to me to apply rather to the International Regulations than to the Board of Trade Instructions for carrying them into effect, or in other words, they place such an interpretation upon the International Regulations as would, in my opinion, require their entire revision.

There always will be a difference of opinion as to the manner in which Art. 3 ought to be drafted, whether the lights ought to be screened in a line parallel with the ship's keel, or whether they should be so screened as to cross at some angle ahead of the ship, and if so, at what angle; but it is foreign to my present purpose to do more than discuss how the Board of Trade have, in the past, and also in the present, endeavoured to carry the International Regulations in this respect into effect.

In 1868 and 1872 the Board of Trade advised their surveyors as follows:—"If the red and green rays cross "each other immediately on passing the stem, the red "light will be seen on the starboard bow, and the "green light on the port bow, as shown in figure 8; "but on the other hand, if they do not cross, at least "to a slight extent, they cannot both be seen ahead."

Woodcuts were attached showing chocks, &c. fitted to a 3-ft. screen, the depth of the chock being equal to the distance from the inner edge of the lens to the outboard edge of the screen, the angle from the middle of the wick to the outer edge of the chock being 3°.

In 1875 a printer's error occurred in the Instructions, which is abundantly shown both by the woodcuts and also by a previous passage in the same Instructions.

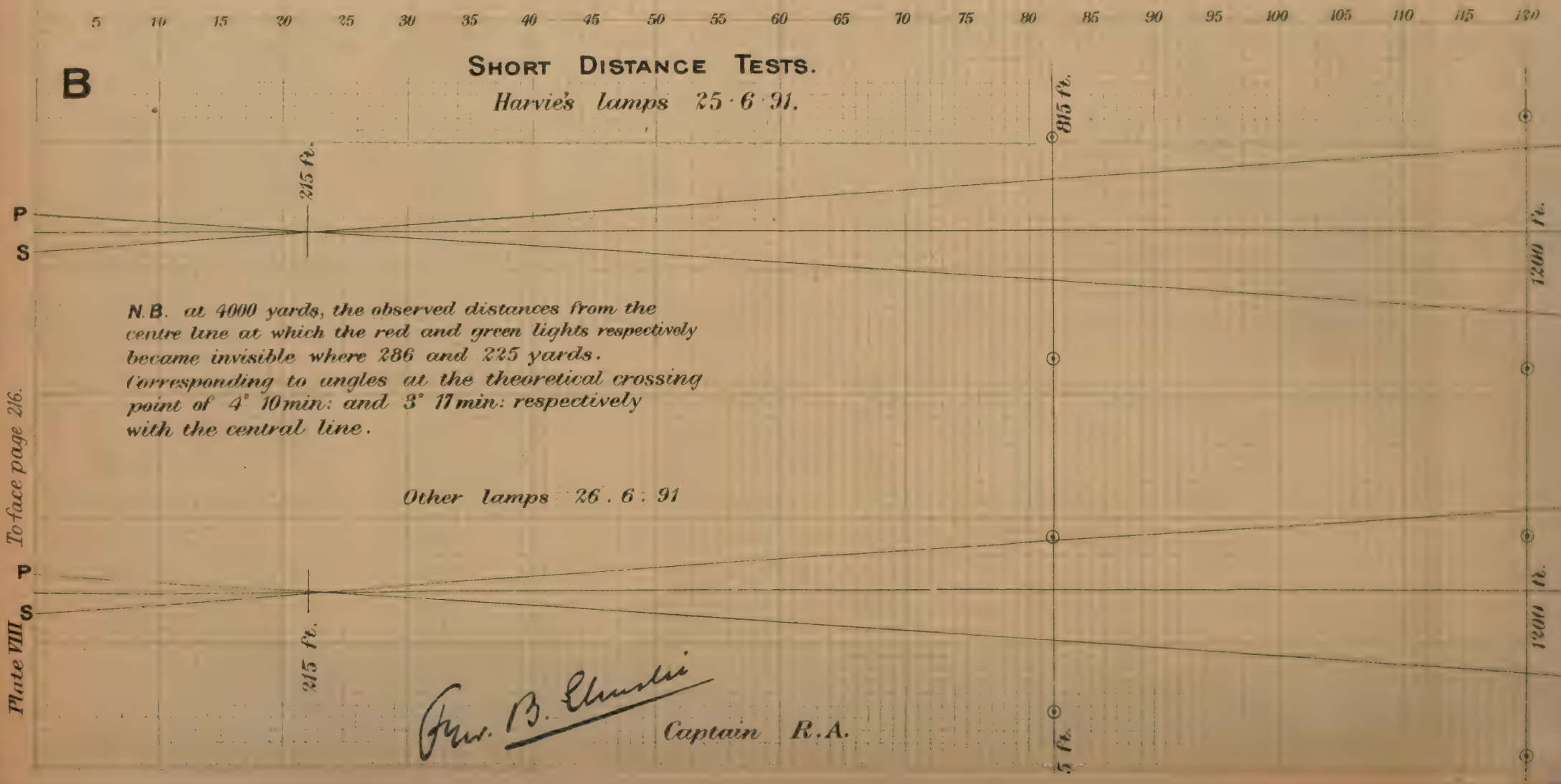
The paragraph in question runs as follows:—

For both lights to be seen ahead it is necessary that the red and green rays should cross at a certain distance ahead. Surveyors will probably find that if the inboard edge of the *wick** touch a line that is parallel with the keel of the ship, and that cuts the outer edge of the forward end of the inboard screen, the rays will cross suitably.

In 1887 and 1891. A line drawn parallel to the keel from the inner edge of the lens indicates the depth of the chock, and this line is there referred to as the line of reference, as illustrated by the accompanying woodcut.

The following is a statement of Captain Wilson as to the angle to which lights were screened prior to 1892, and this has been abundantly confirmed by separate and

* Wick should be lens.


5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
B
SHORT DISTANCE TESTS.
Harvie's lamps 25·6·91.
215 ft.
815 ft.
1200 ft.
P
S
N.B. at 4000 yards, the observed distances from the centre line at which the red and green lights respectively became invisible where 286 and 225 yards. Corresponding to angles at the theoretical crossing point of 4° 10 min: and 3° 17 min: respectively with the central line.
Other lamps 26 . 6 : 91
To face page 216.
Plate VIII
215 ft.
1200 ft.
5 ft.
Captain R.A.

independent statements made by the Board of Trade staff in different parts of the country.

"In the case of the majority of vessels surveyed in the London district the side lights were found to be screened to an angle of 4° or over.

"In the instruction prior to the present one of 1892, it was suggested to surveyors with reference to the drawings contained therein, showing screens 3 ft. in length, that the distance from the inner edge of the lens to the outer edge of the screen showed the required depth of the chock, and although this was a rule of thumb which was more or less dependent upon the position of the wick, we found in practice that it indicated an angle of about 4°, which the present instructions more accurately and definitely define.

(Signed) C. P. Wilson."

Excepting that shipowners accuse the Board of Trade of making sudden and radical alterations in the screening of side lights, I do not think there is much interest in discussing past history. The real question is, whether the Board of Trade Instructions adequately and properly carry out the Regulations for Preventing Collisions at Sea, and if not, how they can be best amended. I am of opinion that they do, for reasons I will state further on. A writer recently attacking the Board of Trade on this question points out that the Washington Conference made a blunder as to the angle to which side lights were previously screened by the Board of Trade, which he believes he was the first to discover. This was not the case; it was noted the moment the protocols from Washington reached this department, and I pointed out to Sir George Nares that the angle had been over-estimated, but I do not think this error in the least affects the Board of Trade. The same writer points out that as the lights were previously screened to 3°, they have subsequently been increased to 4°. This is not the case; the angle of 3° was measured from the centre of the wick, that of 4° from the outer edge of the wick, practically the same thing.

Now let me discuss the question of screening on its merits. The International Regulations require that an uniform light, *i.e.*, the full volume of light, shall be seen ahead of the ship. Let us consider what angle of screening is necessary to insure this, 1°, 2°, 3°, or 4°. I think it unnecessary to discuss angles exceeding 4°.

I attach a table showing the distance ahead of the ship at which the full volume of the lights will cross the middle line, and also the distance at which the full volume of light would be visible to an observer on either side of a bridge 50 feet in width; and we now have vessels in the Mercantile Marine having a beam considerably in excess of 60 feet.

It would not do to limit the position of the observer to the bare 50 feet, and I have added 5 feet to the half breadth for this purpose. And this is certainly not more than is necessary, especially as regards the green light, as the actual distance of visibility from the middle line will always be less than the theoretical distance.

One inch is the smallest width of wick allowed by the Board of Trade Instructions, and the width varies from this to one and three-quarters, and over, in the case of colza oil. The table shows the distances for wicks, one inch and one and a quarter inch in width. I think a reference to this table will show at once that screening the side lights to an angle of either one or two degrees would not be a reasonable compliance with the Regulations for Preventing Collisions at Sea, and that if it was considered desirable to screen the lights to so fine an angle, it would probably be considered necessary to alter the International Regulations.

In rainy and partially foggy weather it is of the utmost importance that the whole light, and not a mere edge of light, should show ahead of the ship.

With reference to the angle of 3° two full-sized lamps were tested by Mr. Samson and myself, at the Glengall Iron Works, with the result that when screened to an angle of 3° we found at a distance of 2·4 ft. from the lamps the green light became invisible at a distance of 17 ft. from the middle line instead of 29 ft., the theoretical distance; and Mr. Samson and I were entirely convinced, after experimenting at short and long ranges at Shoeburyness, with lamps burning two-and-a-half times the usual quantity of oil, that the green light could not be depended upon to show the theoretical distance from the middle line, and we therefore very reluctantly came to the conclusion that 3°, which judging simply from investigation on paper we had previously to experiment considered would probably be the proper angle, was insufficient, and we adopted what appeared to us to be the only alternative and recommended 4°.

That this 4°, coincided with previous practice was purely an accident, *i.e.*, in arriving at this decision we neither of us considered what had been the previous practice of the Board, but merely what angle appeared to us to be the most desirable.

The reason for recommending one angle for all ships, irrespective of their beam, was to ensure that at distances, say, from quarter of a mile to 2 miles, the distance between the red and green rays should be practically the same for all ships, which would not be the case if the lights were merely screened with a view to their crossing at some definite distance ahead of the ship

I trust I have been able to show that the Board of Trade Instructions for carrying into effect Article 3 of the Regulations have been reasonable and proper instructions from 1868, five years before I joined the Board of Trade, up to the present time, and if the Board of Trade ask now for a more definite angle of screening it is—

(1) because greater uniformity has been proved to be necessary;

(2) because an alteration has taken place in the manufacture of side lights, and the positions of the wicks with reference to the lanthorn vary more than they used to do, and consequently render more precise instructions imperative.

I attach lists of vessels the screening of which have been reported to the Board of Trade by their surveyors, and the striking want of uniformity therein shown amply justifies to my mind the Board's recent action. These lists show that the contention of the Thames pilots was urged in ignorance of previous practice; but even if it were not, the regulations are regulations for preventing collisions at sea, and are not regulations for preventing collisions in rivers or inland waters.

I am inclined to think the grievance of the pilots is a sentimental one, but, if it is not, it is a question for the local authorities, and is one which, in my opinion, can be very easily provided against.

The list of vessels of which the angle to which the side lights have been screened has been noted is constantly increasing, but those already printed appear to be a very fair sample of existing practice.

Since writing this, the report of Captain Wilson, Mr. Samson, and Mr. Richards has been received as to the experiments at Westminster, in which they state that when the side lights were screened to an angle of 4° they were found to be screened in exact conformity with the Board of Trade's old Instructions.

(Signed) D. Murray.

March 10th, 1893.

Table showing the theoretical minimum distance at which the full volume of both the side lights can be seen at a point on the middle line ahead of the ship, *i.e.*, directly in line with the vessel's keel. Wicks 1 inch in breadth and placed vertically to the screens.

| Breadth of Wick. | Distance from Wick to Chock. | Minimum distance from the Side lights to a point on the middle line from which the full volume of both lights can be seen, the angle of screening from the extreme outer edge of wick being— | | | | Distance from Outside to Outside Wicks. |
|---|---|---|---|---|---|---|
| | | 1° | 2° 0° 24′ | 3° 1° 24′ | 4° 2° 24′ | |
| Inch. | Inches. | | Feet. | Feet. | Feet. | Feet |
| 1 | 36 | The full volume of both lights cannot be seen on the middle line at any distance. | 1,432 | 409·2 | 238·6 | 20 |
| " | " | | 2,148 | 613·7 | 357·9 | 30 |
| " | " | | 2,865 | 818·4 | 477·2 | 40 |
| " | " | | 3,581 | 1,023 | 596·5 | 50 |
| " | " | | 4,297 | 1,228 | 715·2 | 60 |
| " | " | | 5,013 | 1,433 | 835·1 | 70 |

App. 2, No. 7. TABLE showing the theoretical minimum distance at which the full volume of light of the side lights can be seen from either end of the bridge of another vessel approaching end on, the beam of the vessel being 50 feet. For this purpose some slight addition must bemade to the bare breadth of the bridge. I have allowed 5 feet in the half breadth.

| Breadth of Wick. | Distance from Wick to Chock. | Distance from Outside to Outside of Wicks. | Minimum distance from the Side lights at which the full volume of the lights can be seen from either end of the bridge of another vessel approaching end on, the beam of the vessel being 50 feet, and the angle of screening from the extreme outer edge of the wick being— | | | |
|---|---|---|---|---|---|---|
| | | | 1° | 2° 0° 24′ | 3° 1° 24′ | 4° 2° 24′ |
| Inches. | Inches. | Feet. | | Feet. | Feet. | Feet. |
| 1 | 36 | 20 | The full | 5,729 | 1,637·2 | 954·4 |
| ,, | ,, | 30 | volume of | 6,445 | 1,841·7 | 1,073·7 |
| ,, | ,, | 40 | both lights | 7,162 | 2,046·4 | 1,193 |
| ,, | ,, | 50 | cannot be | 7,878 | 2,251 | 1,306·3 |
| ,, | ,, | 60 | seen. | 8,594 | 2,456 | 1,431·6 |
| ,, | ,, | 70 | | 9,310 | 2,660 | 1,550·9 |

TABLE shewing the theoretical minimum distance at which the full volume of both the Side lights can be seen at a point on the middle line ahead of the ship, *i.e.*, directly in line with the vessel's keel. Wicks 1¼ inches in breadth and placed vertically to the screens.

| Breadth of Wick. | Distance from Wick to Chock. | Minimum distance from the Side lights to a point on the middle line from which the full volume of both lights can be seen, the angle of screening from the extreme outer edge of wick being— | | | | Distance from Outside to Outside of Wicks. |
|---|---|---|---|---|---|---|
| | | 1° | 2° | 3° 1° | 4° 2° | |
| Inches. | Inches. | | | Feet. | Feet. | Feet. |
| 1¼ | 36 | | | 572·9 | 286·4 | 20 |
| ,, | ,, | The full volume of both lights cannot be seen on the middle line at any distance. | The full volume of both lights cannot be seen on the middle line at any distance. | 859·4 | 429·6 | 30 |
| ,, | ,, | | | 1,146 | 572·7 | 40 |
| ,, | ,, | | | 1,432 | 715·9 | 50 |
| ,, | ,, | | | 1,719 | 859·1 | 60 |
| ,, | ,, | | | 2,005 | 1,002 | 70 |

TABLE showing the theoretical minimum distance at which the full volume of light of the Side lights can be seen from either end of the bridge of another vessel approaching end on, the beam of the vessel being 50 feet. For this purpose some slight addition must be made to the bare breadth of the bridge. I have allowed 5 feet in the half-breadth.

| Breadth of Wick. | Distance from Wick to Chock. | Distance from Outside to Outside of Wicks. | Minimum distance from the Side lights at which the full volume of the lights can be seen from either end of the bridge of another vessel approaching end on, the beam of the vessel being 50 feet, and the angle of screening from the extreme outer edge of the wick being— | | | |
|---|---|---|---|---|---|---|
| | | | 1° | 2° | 3° 1° | 4° 2° |
| Inches. | Inches. | Feet. | | | Feet. | Feet. |
| 1¼ | 36 | 20 | The full | The full | 2,292 | 1,145·5 |
| ,, | ,, | 30 | volume of | volume of | 2,578 | 1,288·7 |
| ,, | ,, | 40 | both lights | both lights | 2,865 | 1,431·8 |
| ,, | ,, | 50 | cannot be | cannot be | 3,151 | 1,575 |
| ,, | ,, | 60 | seen. | seen. | 3,438 | 1,718 |
| ,, | ,, | 70 | | | 3,724 | 1,861 |

LIST of VESSELS reported to the BOARD OF TRADE by the SURVEYORS in the LIVERPOOL and LONDON DISTRICTS showing the ANGLE to which their SIDE LIGHTS are screened.

*A Supplementary List of Vessels subsequently reported will be printed.*

LIVERPOOL DISTRICT.

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Achievement | 5½ | 7½ | |
| Assaye | 0 | 0 | |
| Ant | 4 | 3½ | |
| Athenian | 3½ | 3½ | |
| Allanshaw | 3 | 3 | Three sets of side lights. |
| Actor | 2½ | 4½ | |
| Armathwaite | 4½ | 4½ | |
| Ariadne | 3 | 5½ | |
| Aurania | 3 | 3 | |
| Bretwalda | 3½ | 2 | Odd lamps. Two sets of screens 48″ and 44″ long. |
| Bandeeth | 3 | 4 | |
| Banca | 3½ | 7½ | |
| Barranmore | 3½ | 3 | |
| Braemar | 4 | 4 | |
| Benaboard | 4 | 4 | |
| Bann | 4 | 4 | |
| Ballenden | 4 | 4 | |
| Ballochnock | 4 | 4 | |
| Bedlormie | 4½ | 4½ | |
| Brackadale | 6½ | 6½ | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| British General | 3 | 1½ | |
| Bostonian | 1½ | 1½ | |
| Carthaginian | 1 | 1 | |
| Catalonia | 1½ | 1½ | |
| Cephalonia | 1 | 1 | |
| City of Madras | 3½ | 3½ | |
| California | 1½ | 1½ | |
| Combermere | 4 | 4 | |
| Cognac | 4½ | 4 | |
| County of Kinross | 4 | 4 | |
| Crofton Hall | 4 | 4 | |
| Ching Wo | 4 | 4 | |
| Cameo | 4 | 4 | |
| Carlingford Loch | 4 | 2½ | Odd lamps. |
| Charles and Ellen | (Broken) | 1 | |
| Clackmannanshire | 3½ | 2½ | |
| Clan Forbes | 4½ | 4½ | Low lighthouses on forecastle deal, and men cat, stand before them. |
| Capulet | 4½ | 1½ | |
| Charlotte Young | 9½ | (Broken) | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Dollar | 4½ | 4½ | |
| Dunstaffnage | 4 | 4 | |
| Elaine | 2½ | 2½ | |
| Editor | 2½ | 3½ | |
| Eliza Bell | 4 | 4 | |
| Elizabeth Jane | 4 | 4 | |
| Etruria | 1½ | 1½ | |
| Favonian | 5 | 5 | |
| Fire Queen | 1½ | 1½ | |
| Fortuna | 5 | 5 | |
| Flamstead | 4 | 4 | |
| Gallia | Between 1° and 2° | Between 1° and 2° | |
| Gascony | 2½ | 2½ | |
| Glengoil | 3¾ | 3¾ | |
| Glenmore | 4 | 4 | |
| Glencairn | 4 | 4 | |
| Glentana | 4 | 4 | |
| Gulf of Akiba | 4 | 4 | Low lighthouses on forecastle, well inboard, and a man can stand in front of them. |
| Gulf of Papua | 4½ | 4½ | |
| Grange | 5 | 3¾ | |
| Glynwood | 4 | 4 | |
| Grandee | 3½ | 3½ | |
| Hellopes | 1¼ | 1¼ | |
| Hispania | 1¼ | 4 | |
| Hercules | 4 | 4 | |
| Herbert | 5¼ | 5½ | |
| Hesperides | 4¾ | 5¼ | |
| Herat | 8¼ | 8¼ | |
| Isabella | 3¼ | 4 | |
| Jarnak | 3½ | 3½ | |
| Juno | 4½ | 3½ | |
| James Bibby | 4 | 4 | |
| John Evans | 4 | 4 | |
| J. D. Everett | 4 | 4 | |
| Jura | 6¼ | 6½ | This vessel has a second set of screens secured to poop stanchions, within the half-round top-side, with davits and rigging obscuring them. |
| Labrador | ¾ | ¾ | Altered to 4°. |
| Lancaster | 3¾ | 3¾ | |
| Lesbian | 5¾ | 6¼ | |
| Lamma | 8¼ | 7 | |
| Lena | 4¼ | 4 | |
| Lassell | 1¾ | 1¾ | |
| Lochmore | 4¾ | 4¾ | |
| Louisanian | 1 | 1 | Now altered to 4°. |
| Lamona | 4 | 4 | |
| Lady Bessie | 4¾ | 5¾ | |
| Manningham | 6 | 5½ | |
| Mersey | 4 | 4 | |
| Moultan | 4 | 4 | |
| Mangalian | 1¾ | 1¾ | |
| Mexican City | 4 | 4 | |
| Messenger | 4 | 4 | |
| Manchester | 4¼ | 4 | |
| Marsatta | 4 | 4 | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Nasmyth | 2¼ | 1¼ | |
| Nicaragua | 1 | 1 | Now altered to 4°. |
| Orpheus | 3 | 3 | |
| Oporto | 2¼ | 2¼ | |
| Olinda | 3¼ | 3¼ | |
| Oxenholme | 2 | 2 | |
| Ocean Maid | 4 | 4 | |
| Oregon | 1 | 1 | Now altered to 4°. |
| Pavonia | 2 | 2 | |
| Powhattan | 8½ | 8½ | Low lighthouses on forecastle end and inboard. Man can stand in front of them. |
| Parkmore | 0 | 0 | |
| Prince Ja Ja | 3¼ | 3 | |
| Pink Rose | 4¼ | 4¼ | |
| Polestar | 5¼ | 5¼ | |
| Ptarmigan | 4 | 4 | |
| Quentock | 4 | 4 | |
| Quillota | 4 | 4 | |
| Remus | 4 | 4 | |
| Roby | 3¾ | 3¾ | |
| Rosan | 4 | 4 | |
| Reward | 4 | 4 | |
| Regnant | 6¼ | 6½ | In this case the lamp seems to have got shifted from its original position. |
| St. Dunstan | 1½ | 1½ | |
| St. Ronans | 4¼ | 4¼ | |
| St. Kevin | 3¼ | 3¾ | |
| Santiago | 0 | 0 | |
| Sarnia | Diverges ¼° | Converges ¼° | Now altered to 4°. |
| Sierra Parima | 3 | 3 | |
| Sierra Collonna | 2¾ | 2¾ | |
| Serapis | — | — | Has two sets of side lights—one set with burners 1¼ further out than in the other set. Has two sets of screens differently constructed. |
| Sandhill | 4 | 4 | |
| Sea Gull | 4 | 4 | |
| Talbot | 3 | 3 | |
| Tinto | 4 | 2¾ | |
| Telephone | 5¼ | 4¼ | |
| Toronto | 1 | 1 | Now altered to 4°. |
| Trevoses | 4¼ | 4¼ | |
| Talavera | 3¼ | 3¾ | |
| Ulrica | 4 | 4 | |
| Volante | 3¼ | 3¼ | |
| Volney | 4¼ | 4¼ | |
| Virginian | 3¾ | 3¾ | |
| Volga | 3¾ | 3¾ | |
| Venetian | 4 | 5¼ | |
| Walney | 4 | 2¼ | |
| White Rose | 2¼ | 2¼ | |
| Warren Point | 3¼ | 3¼ | |
| William Gordon | 4 | 4 | |
| Yucatan | ¾ | ¾ | Now altered to 4°. |
| Zeno | 3¼ | 4 | |

## LONDON DISTRICT.

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Parthenope | 5 | 6 | |
| Port Jackson | 11 | 12 | |
| Murrumbidgee | 5½ | 5½ | |
| Plover | — | — | Right ahead to 3°, owing to shape of chock. |
| Primera | 2 | 7½ | |
| Warwick Castle | 3½ | 3½ | |
| Bungaree | 4 | 4 | |
| Rohilla | 0 | 0 | |
| Himalaya | 0 | 0 | |
| Ionic | 3½ | 3½ | Oil lamps. |
| „ | 2½ | 2½ | Electric lights. |
| Bombay | 5¼ | 5¼ | |
| Massilia | 3 | 3 | |
| Merkura | 4 | 4 | |
| Italy | 5 | 5 | |
| Ganges | 6 | 6 | |
| Glenfinlas | 3 | 3 | |
| Glenartney | 4 | 4 | Altered to this angle prior to inspection. |
| Glenogle | 2 | 2 | |
| Cooleen | 2½ | 1½ | Now screened to 4°. |
| Glendarroch | 5 | 5 | |
| Doon | 3 | 3 | |
| Sobraon | 0 | 0 | |
| Swan | 6 | 6 | |
| Oxus | —1 | —1 | *i.e.*, outwards from the keel. |
| Calabria | 0 | 0 | |
| Derwent | 2 | 2 | |
| Portslade | 4 | 4 | |
| Normandy | 0 | 0 | |
| Rouen | 0 | 0 | |
| Ballumbie | 7 | 0 | |
| Calais Douvres | — | — | All these vessels, belonging to the London, Chatham, and Dover Railway Company, had their lights screened at angles varying from 3° to 3½°. |
| Empress | — | — | |
| Victoria | — | — | |
| Wave | — | — | |
| Breeze | — | — | |
| Maid of Kent | — | — | |
| Samphire | — | — | |
| Paris | — | — | |
| Chatham | — | — | |
| Calais | — | — | |
| Albert Victor | — | — | These vessels, belonging to the South-Eastern Railway Company, had their lights screened at angles varying from 3° to nearly 4°. |
| Mary Beatrice | — | — | |
| Louise Dagmar | — | — | |
| Achille Adams | — | — | |
| Myleta | — | — | |
| | Deg. Min. | Deg. Min. | |
| Pioneer | 4 46 | 4 46 | Trinity Corporation. |
| Guide | 4 46 | 4 46 | |
| Lady Vita | 4 0 | 4 0 | Dover Harbour Board, 4° nearly. |
| Granville | 4 0 | 4 0 | |
| Craig Alvah | 3 45 | 3 45 | |
| Gustafva | 3 45 | 3 45 | |
| Gus Simpson | 4 5 | 4 5 | |
| Premier | 4 15 | 4 15 | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Deg. Min. | Deg. Min. | |
| Kate | 7 21 | 7 21 | |
| Saffron | 5 43 | 5 43 | |
| Louisa | 4 30 | 4 30 | |
| Vigilant | 4 0 | 4 0 | Trinity Corporation nearly. |
| Wellington | 4 0 | 4 0 | |
| Blazer | 4 0 | 4 0 | Nearly. |
| Catherine and Margaret. | 3 0 | 3 0 | About. |
| Silver Spray | 3 0 | 3 0 | |
| Eureka | 3 30 | 3 30 | |
| Acorn | 3 0 | 3 0 | |
| Enterprize | 4 0 | 4 0 | |
| Petrel | 4 0 | 4 0 | |
| Mary Ann | 3 0 | 3 0 | |
| Eagle | 4 0 | 4 0 | |
| John Lee | 4 0 | 4 0 | |
| Waveney | 4 0 | 4 0 | |
| Corinthian | 4 0 | 4 0 | |
| Laura Anne | 3 30 | 3 30 | |
| | Degrees. | Degrees. | |
| Laura | — | — | These vessels had their lights screened at angles varying from 2° to 5°. |
| Alliance | — | — | |
| Diana | — | — | |
| Ella | — | — | |
| Honfleur | — | — | |
| Southampton | — | — | |
| South Western | — | — | |
| Wolf | — | — | |
| Guernsey | — | — | |
| Hilda | — | — | |
| Zelia | 2 | 2 | The surveyor, James Magowan, reports "I have inspected "the side lights and "screens of a large "number of ves-"sels in addition "to the above, "the majority of "which were found "to be practically "fitted to the angle "of 4°, and some "required very tri-"fling alterations." |
| Ralphe B. Peake | 0 | 0 | |
| Charles E. Lefurgey | 0 | 0 | |
| Aldersons | 5 | 5 | |
| Isabelle | 0 | 0 | |
| Lotus | 5 | 5 | |
| New City | 2 | 2 | |
| Ebenezer | 3 | 3 | |
| Ocean Belle | 0 | 0 | |
| Euphemia | 0 | 0 | |
| Anglian | 3½ | 3½ | |
| Orinoco | 3 | 3 | |
| Arab | 2 | 2 | |
| Scot | 3 | 3 | |
| Magdalena | 3 | 3 | |
| Tamar | 3 | 3 | |
| Tagus | 2½ | 2½ | |
| Spartan | 3½ | 3½ | |
| Prince Leopold | 2 | 2 | |
| Duchess of Edinburgh | 2 | 2 | |
| John Gembles | —4 | 5 | By minus — is meant screened outwards from keel. |
| Goldengate | 5 | 5 | |
| Primera | Broken and unshipped. | 6 | |
| Rohilla | 4 to 5 | —4 to 5 | *i.e.*, outwards from the line of keel. Not to be confounded with the Rohilla previously mentioned. |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Wilhelmine | 9 | 9 | |
| Bengal | — | — | These vessels have had their screens altered to an angle of 4°, and and no note has been made of their previous screening. |
| Ganges | — | — | |
| Oriental | — | — | |
| Pekin | — | — | |
| Bombay | — | — | |
| Carmarthenshire | — | — | |
| Nonpariel | — | — | |
| Lord Alfred Paget | — | — | |
| Lady St. Germans | 1½ | −½ | *i.e.*, outboard. |
| Shaigow | 0 | 0 | Now screened to 4°. |
| Fairmount | 0 | 0 | Do. |
| Primrose | — | — | Now screened to 4°; screens were broken, so that previous angle could not be ascertained. |
| Alert | — | — | Screened so as to cross bow of ship. Now screened to 4°. |
| Lo | — | — | Could not ascertain, as screens were not permanently fixed. Now 4°. |
| Lomond | — | — | |
| Manda | — | — | All originally screened to an angle exceeding 4°. |
| Naja | — | — | |
| Mima | — | — | |
| Cadiz | — | — | Screened to an angle in excess of 4°. |
| Wilcannia | — | — | Found to be screened to an angle of 4°. |
| Methven Castle | 0 | 0 | |
| Malaga | — | — | Screened in excess of 4°. |
| Lisbon | — | — | |
| J. M. Strachan | — | — | |
| Norman Castle | 0 | 0 | |
| Culgoa | — | — | Greater than 4°. |
| Dunottar Castle | 0 | 0 | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Glengyle | — | — | Less than 4°. |
| Glenfruin | — | — | Do. |
| Glenavon | — | — | Do. |
| Zweena | — | — | Do. |
| Polly Stott | — | — | In excess of 4°. |
| Moris Berg | — | — | Do. |
| Mathilda | — | — | Do. |
| Assel | — | — | Do. |
| Euphrates | — | — | Do. |
| Bay of Bengal | — | — | Do. |
| Mountain Laurel | — | — | Do. |
| Northumbria | 3 | 3 | |
| Serica | 6 | 6 | |
| Orari | 6 | 6 | |
| John | 0 | 0 | Nearly. |
| Girvan | 4 | 4 | |
| Sully | 10 | 10 | |
| Chepica | 6 | 3 | |
| Glen Caladh | 4 | 4 | |
| Ennerdale | −4 | 6 | Port light outwards from keel. |
| Duke | 3 | 3 | |
| Raleigh | 3 | 3 | |
| Glenariff | 6 | 6 | |
| Pride | 6 | 6 | |
| Falls of Foyers | 6 | 6 | |
| Strathclyde | 8 | 8 | |
| Rubea | 8 | 8 | |
| Privateer | 6 | 6 | |
| Fairway | 5 | 6½ | |
| Letterewe | 8 | 8 | |
| John Remill | 8 | 8 | |
| Lorenz Hansen | 8 | 8 | |
| Coptic | — | — | 20 feet abaft the stem altered to 4°. |

A large number of the ships reported upon have been omitted from this list, where the previous angle was not correctly ascertained.

## Supplementary Lists of Vessels reported to the Board of Trade showing the Angle at which their Side Lights are Screened.

### I.

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Ardgannait | 3½ | 3½ | |
| Ardshiesaig | 1½ | 2½ | |
| Adelaide Mary | 5½ | 6½ | |
| Alcesby | 1½ | 1½ | First set of lanthorns. |
| | 2½ | 2½ | Second set of lanthorns. |
| Barrister | ½ | ½ | Electric lights |
| | 2 | 2 | Paraffin lamps } 3 sets. |
| | 6½ | 6½ | Paraffin lamps |
| Bellerophon | 0 | 0 | |
| Bessels | 3½ to 5 | 3½ to 5 | Lanthorns free to play in the screen 2 feet each. Carries 3 sets, all different. |
| Bessemer | 3½ | 3 | |
| Bessel | 4 | 4 | |
| Bogie | 3½ | 3½ | |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Craignair | 4 | 4 | |
| Clan Munroe | 3½ | 3½ | By screens on bridge house deck, but there are low lighthouses on after end of forecastle, which a man can stand in front of. These are not at present in use. |
| Culmore | 3½ | 4½ | |
| Cynthiana | 3½ | 3½ | |
| Creaden | 3½ | 4½ | |
| Dartmore | 3½ | 2½ | |
| Eton's Isle | 4 | 4 | |
| Flamingan | 3½ | 3½ | |
| Fulwood | 2½ | 2½ | |

App. 2, No. 7.

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Glenfield | 2¼ | 2¼ | |
| Garfield | 3¼ to 4¼ | 3¼ to 4¼ | Lanthorn free to play in cage one inch. |
| Gregory | 6½ | 6½ | |
| Gilbertson | 4 | 4 | |
| Helliades | 2½ | 3½ | |
| Hildegard | 3½ | 5 | |
| Heptarchy | 2½ | 2½ | |
| Highland Mary | 4½ | 5½ | |
| Hibernia | 3¾ | 3¾ | |
| Holt Hill | 4 | 4 | |
| Hallamshire | 6½ | 6½ | |
| Incemore | 8 | 2 | |
| Khyber | 2½ | 2½ | |
| Liverpool | 6½ | 6½ | |
| Legislator | 2½ | 2½ | |
| Lord Londonderry | 1½ | 1½ | |
| Mariner | 4½ | 4½ | Altered to 4°. |
| Mexican | 1½ | 1½ | |
| Meath | 4 | 4 | |
| Mentmore | 2¾ | 4 | |
| Monkseaton | 4 | 4½ | |
| Neva | 5½ | 5½ | |
| Norseman | 5 | 5 | |
| Pallas | 3½ | 3½ | Upper set of screens. |
| | 2¼ | 3¼ | Lower set of screens. |
| Perseverance | 3½ | 3½ | |
| Princess Sofia | 1¾ | 2¼ | |
| P. T. Palmer | 4 | 4 | |
| Rhine | 8 | 8 | |
| Roman | 3 | 3 | |
| Ryelands | 6 | 6 | |
| Sierra Cordova | 3¾ | 3¾ | |
| Swan | 4 | 4 | |
| Swift | 5 | 5 | |
| Starlight | 3¾ | 3¾ | First set of lamps. |
| | 4½ | 4½ | Second set of lamps. |
| St. Enoch | 4 | 3½ | |
| Sydenham | 3½ | 3½ | |
| Sicily | 5 | 4½ | |
| Titanic | 2¾ | 2¾ | |
| Thetis | | 6 | First set of lamps. |
| | 5¼ | 5¼ | Second set of lamps. |
| Ulenda | 4 | 4 | |
| Unity | 2¼ | 2¼ | |
| Volga | 4¼ | 4¼ | |
| York | 3¾ | 3½ | |
| Zancla | 2½ | 3¼ | |

Mr. W. H. Laslett, Surveyor, Liverpool, reports:—"I have found cases where there are three sets of side lights, differing in size and position of "lights; and others where, with the same side lights, the two sets of screens are differently converged."

II.

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Abeona | — | — | Lights in towers partially obscured. Towers now disused, and light screened on upper bridge to 4°. |
| Athole | — | — | Lights on lower bridge partially obscured. Lights now screened on upper bridge to 4°. |
| Ainsdale | — | — | Lights partially obscured. |
| Amanda | 4 | 4 | |
| Artisan | 4 | 4 | |
| Avona | 5 | 5 | Now screened to 4°. |
| Ballumbie | 4 | 4 | |
| Charles | 4 | 4 | |
| Chrysomene | 4 | 4 | |
| Emily Water | 4 | 6 | Starboard light now screened to 4°. |
| Glendower | 6 | Screen out | Now screened to 4°. |
| Garrison | 4 | 2 | Now screened to 4°. |
| Horden | 5 | 5 | Now screened to 4°. |
| Isabel Browne | 3 | 2 | Now screened to 4°. |
| Jane Burril | 2 | 1 | Now screened to 4°. |
| Kate B. Jones | 4 | 4 | |
| Lancefield | Screens out | | Now screened to 4°. |
| Lottie Stewart | Screens out | | Now screened to 4°. |
| Lennie Burril | Screens out | | Now screened to 4°. |
| Linwood | 4 | 4 | |
| Nettie Murphy | 6 | 4 | Port light now screened to 4°. |
| North Devon | 1 | 2 | Now screened to 4°. |
| Newman Hall | 4 | 4 | |
| Phyllis | 6 | 5 | Now screened to 4°. |
| Quickstep | — | — | Lights partially obscured. Now screened on upper bridge to 4°. |

| Name of Vessel. | Port Light. | Starboard Light. | Remarks. |
|---|---|---|---|
| | Degrees. | Degrees. | |
| Rowtor - - - | 4 | 4 | |
| Strathspey - - | 8 | 4 | |
| Trevaynor - - - | — | — | Lights partially obscured in towers. Towers condemned, and lights now screened on upper bridge to 4°. |
| Tockwith - - | 4 | 4 | |
| Wm. Symington - | Screen out | 2 | Port light now screened to 4°. |
| Widdrington - - | 2 | 2 | Lights partially obscured. Screens now put 1′ further out, and lights screened to 4°. |

*Abstract.*

14 vessels' lights screened to no rule.
4 vessels' lights screened to finer angle than 4°.
3 vessels' lights screened to greater angle than 4°.
10 vessels' lights screened to angle of 4°.

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No. 8.—Supplementary List of Vessels inspected in the London District.

| Name and Official Number. | Owners. | Angle to which Lights were found to be Screened when first visited. | Remarks. |
|---|---|---|---|
| Argonaut; 72,412 - | T. Carmichael, Greenock | Port $\frac{1}{2}$°, starboard 0° - - | Starboard outer edge of lamp wick in line with outer edge of chock. |
| Miltiades; 60,710 - | W. Henderson, Aberdeen | Port 6°, starboard 5° - - | |
| Lady Elizabeth; 81,576 - | G. Karran, Isle of Man - | Port 4°, starboard 4$\frac{1}{4}$° - - | |
| Salamis; 70,443 - - | W. Henderson, Aberdeen | Port 6°, starboard 6$\frac{1}{2}$° - - | Lanthorns could be moved several degrees either way. |
| Mermerus; 67,904 - | Thos. Carmichael, Greenock. | Port 6$\frac{1}{4}$°, starboard 7° - | |
| Aristides; 70,454 . - | W. Henderson, Aberdeen | Port 5°, starboard 4° - - | |
| Norman Macleod; 72,420 | J. G. Nicholson, Liverpool. | Port 4$\frac{1}{2}$°, starboard 5$\frac{1}{2}$° - - | Lanthorns could be moved in cage. |
| Orontes; 77,465 - - | W. Henderson, Aberdeen | Port 4$\frac{3}{4}$°, starboard 7° - - | Both these lights were screened by the catheads to 1° or nearly so. |
| Karoo; 85,449 - | C. R. Burgess, Wolfville, King's Co., N.S. | 5° across the bow - - | These screens were fitted below the mainrail, the lights being secured in boxes. These have been removed, and the screens are now fitted on stanchions secured to rail by an iron stay, and screened to an angle of 4°. |
| Elisabeth Mentz; foreign | - - - - | It was not possible to ascertain the angle in this case, as the screens were old and broken, and the single stanchions which supported them were much bent. | The lights were carried aft on each quarter, but have now been placed at the fore side of fore rigging, and screened to an angle of 4°. |
| Rhone; 72,547 - - | James Nourse, 3, Fenchurch Street, City. | These lights were carried above forecastle deck and abreast the forecastle breast beam, and were found to be about $\frac{1}{4}$° within the 4° required = 3$\frac{3}{4}$°. | No alteration was made in this case. |
| Caledonia; 76,579 - | Jas. Duncan, 79, Mark Lane, City. | These lights were carried amidships, and were found to be screened to 4°. | The master afterwards stated that the screens were altered at Queenstown by the Board's surveyor. |
| Bazalgette; 94,298 - | The London County Council, Spring Gardens, London. | These lights were carried amidships on ends of flying bridge, and were found to be screened to 3°. | These lights had apparently at one time been screened to 4°, as a batten $\frac{1}{2}$ inch thick had been nailed on to the chock, and by removing this batten it gave the required angle of 4°. |
| Violet; steam yacht - | Not known. Agents, Cox and King, 5, Suffolk Street, Pall Mall. | The lights were carried on stanchions at fore part of mainwaist. The starboard light was found to be screened 7$\frac{1}{2}$° across bow, and the port light 5° across bow. | The screens have been set in a fore and aft line, and screened to 4°. |
| Accomac; 86,294 - | Tapscott S.S. Co., Ld., 39, Old Hall Street, Liverpool. | These lights were carried on the fore end of bridge deck, and the port light was found to be screened 5$\frac{1}{2}$° across the bow, and the starboard light 3° across the bow. | The screens have been set to an angle of 4°. |
| Douglas; 14,852 - - | N. Bate, Sea View, Aberavon, Glamorgan. | These lights were carried at after part of mainwaist, and were found to be screened to an angle of 6°. Both lights showing into the fore rigging. | The screens have been shifted from after part of mainwaist to fore side of fore rigging, and are now screened to angle of 4°. |
| Opal; steam yacht - | Not known. Agents, Cox and King, 5, Suffolk Street, Pall Mall. | These lights are carried on ends of flying bridge, and were found to be screened to an angle of 10° across the bow. | These lights have now been screened to the required angle of 4°. |

APP. 2, No. 8.

| Name and Official Number. | Owners. | Angle to which Lights were found to be Screened when first visited. | Remarks. |
|---|---|---|---|
| Romanoff; 70,436 - | J. B. Nicol, Aberdeen - | These lights are carried on after end forecastle deck, and were found to be screened to an angle of 3° across the bow. | These lights have now been screened to an angle of 4°. |
| Duke of Argyll; 52,816 - | H. E. Montgomerie, Managing Owner, 36, Gracechurch Street. | These lights are carried at after end of forecastle deck, and were found to be screened to an angle of 9° across the bow. | The centre of the light when projected forward, was found to strike the cathead, on the lower edge 2 feet 6 inches out from the ship's side. The catheads thus obscured the lights on each side. The screens have now been raised 12 inches, this being found to be sufficiently high to allow the lights to be seen above the catheads. They have now been screened to an angle of 4°. |
| Merchant; 58,029 - | Messrs. Bull & Co., Newhaven. | Port 0°, starboard 2°, across bow | Screens carried on overhanging stanchions aft, chocks removed and boards cut off 3 feet forward of light. (Inclination of screens to keel giving required angle.) |
| S.S. Viking; 63,851 - | The London, Brighton, and South Coast Railway Company, Newhaven. | Port 2°, starboard 5°, across bow | Starboard stanchions adjusted and boards cut off 3 feet forward of light. |
| Sch. Robert Brown; 69,771 | David Marrow, Connah's Quay, Flint. | Starboard 6°, port 7°, across bow | Defect caused by stanchions being very much bent. |
| George B. Balfour; 83,999 | John Fisher, Fisher Building, Barrow. | Starboard 4°, port 4°, across bow | Screens carried on overhanging stanchions in mizzen rigging. |
| Rennes S.S.; 54,597 - | London, Brighton, and South Coast Railway Company, Newhaven. | Starboard 2°, port 2°, across bow | Screens outside bridge 4 feet forward of light; chocks reduced to give 4°. |
| Sch. Aeron Lass; 9,830 - | J. Jones - - | Port 8°, starboard 6°, across bow | Stanchions very much bent and deck's sockets worn, causing stanchions to play considerably. |
| Sussex Maid; 11,064 - | Mr. Robinson, Newhaven | Port 6°, starboard 6°, across bow | Stanchions at fore rigging; lamps recessed; and 2-inch chocks fitted 3 feet forward of lamps. |
| Pennine; 56,480 - | Messrs. Bull & Co., Newhaven. | Starboard 4°, port 6°, across bow | Stanchions are slight and easily bent. (Owner intends replacing by stronger ones.) |
| Mindet S.; foreign - | Agents, Messrs. Andorsen, Becker, & Co., 4, Eastcheap. | Port 6°, starboard 6°, across bow | Screens fitted on bulwarks forward of fore channels, 2½-inch chocks added to give required angle. |
| Bn. Zulu; 65,677 - | John Grace, Guernsey - | Port 6°, starboard 4°, across bow | Defect due to stanchion being bent, but this was set back in my presence. |
| Crescent (Tug); not regd. | - - - - | Port 6°, starboard 6°, across bow | Chocks on fore end of screen boards increased to 3½ inches. |
| S.S. Idlewild; 68,873 - | Metropolitan S.S. Co., 27, Leadenhall Street. | Port 4°, starboard 4°, across bow | Screen boards 3 feet with 3 inch chocks, carried on overhanging stanchions secured to bridge rail. |
| S.S. River Derwent; 85,930. | S.S. River Derwent, Ltd., 69, Buchanan Street, Glasgow. | Port 4°, starboard 4°, across bow | Screens secured to ends of bridge in line with keel; screens 3 feet 9 inches forward of light. Lamps recessed to give required angle. |
| City of Glasgow; 56,172 - | Geo. Smith, 45, West Nile Street, Glasgow. | Port 5°, starboard 4°, across bow | Chock to port screen increased by ¾ inch to give required angle. |
| George (Ketch); 13,623 - | R. A. Smith, Chichester - | Port 8°, starboard 6°, across bow | Port stanchion straightened and chocks on both boards increased by 1¼ inches. |
| S.S. Montanes; foreign - | Messrs. McAndrew & Co., Cannon Street. | Port 4°, starboard 4°, across bow | Screens secured outside of bridge. |
| S.S. Peeress; 90,333 - | Messrs. Taylor and Sanderson. | Angle could not be checked, as lamps were damaged, badly fitted, and burners required adjusting to centre of lens. | Screens fitted on overhanging stanchions outside bridge. Report sent to surveyors at Blyth. |
| Formosa; 93,427 - - | P. and O. Company - | 5° - - - | Side lights carried on upper bridge. |
| Rome; 81,820 - - | P. and O. Company - | Right ahead - - - | Side lights prior to alterations were carried on lower bridge. The rays were obscured by a high topgallant forecastle and permanent fittings on forecastle. The side lights are now fitted to upper bridge. |
| Paris; 95,854 - - - | London, Brighton, and South Coast Railway Company. | 3° - - - | Side lights carried on paddle boxes. |
| Yorkshire; 96,366 - | Bibby Steam Ship Company, Limited. | 1¾° - - - - | Side lights carried on bridge. |
| Patriarch; 60,696 - | W. Henderson, Aberdeen | Port 6½°, starboard 5½° - - | Fitted at after end of top gallant forecastle. |
| Gladova; 93,820 - - | G. Wakeham, Liverpool | Port 5¾°, starboard 5° - - | Fitted in towers. |
| Camana; 29,935 - - | J. Burgess, Swansea - | Port 4°, starboard 2¾° - - | Port screen is moveable to the extent of 3° or 4°. Starboard screen is bent inboard nearly 15° from upright, and rigid in this position. |
| Oamaru; 71,682 - - | Shaw, Savile and Albion Co., London. | By screens. Port 5°, starboard 4°. / By catheads. Port 1¾°, starboard 1¾°. | Position of lights had to be altered. |

| Name and Official Number. | Owners. | Angle to which Lights were found to be Screened when first visited. | Remarks. |
|---|---|---|---|
| Antares; 69,929 | R. Penney, Esq., Brighton | Port 8°, starboard 9½° | These screens were badly fitted, and could be moved several degrees. |
| Pericles; 70,463 | W. Henderson, Aberdeen | Port 5½, starboard 4¾° | Fitted at aft end of forecastle. |
| Miltiades; 60,710 | W. Henderson, Aberdeen | Port 6°, starboard 5° | Fitted a few feet forward of fore rigging on stanchions. Port screen 57 and starboard screen 59 inches long. |
| S.S. Eveleen of Belfast; 96,274. | John Mulligan, 55, Donegal Place, Belfast. | Port 3°, starboard 5°, across bow. No spare lamps carried. | Screens 3 feet 6 inches in front of flame, fitted to overhanging stanchions above bridge rail. Both lights appear to have been screened to 3° across bow, but the starboard lamp was lost recently and replaced by an odd lamp, in which the burner is 6¾ inches distant from side of screen, whereas the port lamp is only 5½ inches from side of screen. |
| Damascus; 94,521 | William Henderson, Aberdeen. | Right ahead, altered to 4° | |
| Ruahine; 99,257 | New Zealand, S.S. Company. | About 2°, altered to 4° | |
| Faraday; 68,535 | Siemens Bros. & Co. | About 3°, altered to 4° | |
| Lapwing; 79,687 | General Steam Navigation Company. | Both lights screened to 3° | |
| Echuca; 95,520 | W. Lund, Esq., London | Both lights screened to 5° | |
| Gulf of Martaban; 93,211 | Greenock S.S. Company | Both lights screened to 8° | |
| Soukar; 52,653 | - | Port 6½°, starboard 8° | Screens 48 inches long. |
| Sophocles; 77,455 | - | Port 6°, starboard 6° | Otherwise all in order. |
| Crossowen; 82,275 | - | Port 3°, starboard 2½° | Otherwise all in order. |
| Bootle; 69,711 | - | Port 5¼°, starboard 5¾° | Had no rods or stop-pins to preserve screen in position. |
| Countess of Devon; 68,327 | - | Port 5¼°, starboard 4½° | Screen 50 inches in length. |
| Mary Mitchel | - | Port 5°, starboard 5° | Improperly stayed. |
| Janet Ferguson; 48,922 | - | Port 5°, starboard 5½° | Lamp projected 4 inches from face of screen to clear head gear. |
| Helen Denny; 56,168 | - | Port 5°, starboard 6° | |
| Fortuna; 72,368 | - | Port 2°, starboard 1½° | |
| Jennie Harkness; foreign | - | Port 7°, starboard 7° | Light screens placed abreast mizzen rigging. Master purposes building side light towers on forecastle. |

No. 9.—Measurements of Side-Lights.—Particulars of 46 Side Lights examined by Sir Digby Murray, and the measurements of 16 taken by him, the remaining 30 being of the same pattern, and the measurements approximately the same. The measurements were in each case verified by myself. These 46 side lights were all that were in stock in Leith.

4th September 1893. (Signed) G. Carlisle.

| No. of Lamps of same Pattern. | Dimensions. Breadth. | Dimensions. Height. | Distance from Inner Side of Lamp to Outer Edge of Wick. | Distance from Inner Side of Lamp to Inner Side of Lens. | Difference between the two Measurements. | Angle of Convergence. |
|---|---|---|---|---|---|---|
| | Ins. Ins. | Inches. | Inches. | Inches. | Inches. | ° ′ ″ |
| 3 | 9½ × 9½ | 12 | 5·625 | 2·6875 | 2·9375 | 4 40 0 |
| 1 | 9½ × 9¼ | 12 | 4·875 | 2·25 | 2·625 | 4 10 15 |
| 1 | 9½ × 9½ | 12 | 5·125 | 2·25 | 2·875 | 4 34 0 |
| 1 | 9¼ × 9½ | 12 | 5·25 | 2·375 | 2·875 | 4 34 0 |
| 1 | 9½ × 9½ | 12 | 5·25 | 2·375 | 2·875 | 4 34 0 |
| 1 | 9½ × 9½ | 12 | 5·375 | 2·1875 | 3·1875 | 5 3 30 |
| 1 | 9½ × 9½ | 12 | 4·875 | 2·1875 | 2·6875 | 4 16 7 |
| 4 | Similar | — | — | — | — | — |
| 4 | 9½ × 9½ | 12 | 5·625 | 2·6875 | 2·9375 | 4 40 0 |
| 4 | 9 × 9 | 11 | 5·1875 | 1·5 | 3·6875 | 5 50 45 |
| 2 | 10 × 10 | 12 | 5·625 | 2·5 | 3·125 | 4 57 45 |
| 2 | 10 × 10 | 12 | 5·125 | 2·5 | 2·625 | 4 10 15 |
| 6 | 9½ × 9½ | 12 | 4·375 | 2·1875 | 2·1875 | 3 28 40 |
| 1 | 9 × 9 | 11 | 5·25 | 2·25 | 3·0 | 4 45 45 |
| 1 | 9 × 9 | 11 | 4·50 | 2·1875 | 2·3125 | 3 40 30 |
| 1 | 9 × 9 | 11 | 5·25 | 2·25 | 3·0 | 4 45 45 |
| 1 | 9 × 9 | 11 | 5·375 | 2·1875 | 3·1875 | 5 3 30 |
| 11 | Similar | — | — | — | — | — |
| | | | | | Average Angle | 4 34 40 |

App. 2, Nos. and 10.

PARTICULARS of SIDE LIGHTS measured by Sir DIGBY MURRAY and verified by us.

(Signed) SAUL WARNER.
JOHN A. ROWE.

| Name of Maker. | No. | Dimensions. Breadth. Ins. | Dimensions. Height. Ins. | Distance from Inner Side of Lamp to Outer Edge of Wick. Inches. | Distance from Inner Side of Lamp to Inner Side of Lens. Inches. | Difference between the two Measurements. Inches. | Angle of Convergence when Screened to Board's old Rule. ° | ′ | ″ |
|---|---|---|---|---|---|---|---|---|---|
| Lilley & Son | 1 | 9 | 9 | 11 | 4·75 | 1·4375 | 3·3125 | 5 | 15 | 15 |
| „ | 1 | 9 | 9 | 11 | 4·75 | 1·5 | 3·25 | 5 | 8 | 45 |
| Hughes & Son | 1 | 9⅜ | 9⅛ | 11½ | 4·25 | 1·5625 | 2·6875 | 4 | 16 | 0 |
| „ | 1 | 9 | 9¼ | 12 | 4·125 | 2·0625 | 2·0625 | 3 | 16 | 45 |
| „ | 1 | 9 | 9 | 12 | 4·25 | 1·53175 | 2·71825 | 4 | 19 | 0 |
| „ | 1 | 9 | 9 | 12 | 4·75 | 1·875 | 2·875 | 4 | 34 | 0 |
| „ | 1 | 9 | 9 | 12 | 4·75 | 1·875 | 2·875 | 4 | 34 | 0 |
| „ | 1 | 9 | 9 | 12 | 4·75 | 1·875 | 2·875 | 4 | 34 | 0 |
| Griffiths | 1 | 9 | 9¼ | 11 | 4·5 | 2·5625 | 1·9375 | 3 | 4 | 45 |
| Ridsdale* | 1 | 9½ | 9⅛ | 11 | 5·25 | 2· | 3·25 | 5 | 8 | 45 |
| „ | 1 | 10½ | 10½ | 13 | 5·625 | 3·125 | 2·5 | 4 | 0 | 0 |
| W. & A. Nunn | 1 | 9¼ | 9 | 11 | 5·0 | 1·3125 | 3·6875 | 5 | 50 | 45 |
| „ | 1 | 9 | 9 | 11 | 4·375 | 1·9375 | 2·4375 | 3 | 52 | 15 |
| „ | 1 | 9⅛ | 9⅛ | 11 | 4·75 | 2·125 | 2·625 | 4 | 10 | 15 |
| | | | | | | | Average Angle | 4 | 26 | 2 |

The above patterns represent a great number of lights. Messrs. Ridsdale, for instance, say they have manufactured 4,800 lamps of the pattern marked*; and it is to be noticed that during the last six months, although the pattern of the lanthorn in this case has not been changed, the wick has been moved one inch nearer the side of the lamp, so as to enable the present Board of Trade rule to be carried into effect, *i.e.*, so that the centre of curvature of both lens and reflector may be the centre of the wick.

No. 10.—LETTER from the GERMAN LLOYD to the BOARD OF TRADE.

52, Markgrafenstrasse Berlin, W.,
February 14th, 1895.

SIR,

REFERRING to the recent discussions on the screening of side lights on board of ships, we herewith beg to enclose for your information a copy of a report delivered by us, under date of January 24th last, on this subject, to the See-Berufs-genossenschaft in Germany.

Trusting that the statements therein will be of some interest to you, we remain,

Yours obediently,
GERMANISCHER LLOYD.
(Signed) ULRICH. MIDDENDORF.

The Assistant Secretary,
Marine Department, Board of Trade.

(Translation.) Enclosure.

REPORT by the GERMAN LLOYD on the FIXING and SCREENING of the SIDE LIGHTS of SEA-GOING VESSELS.

I.—THE FIXING of SIDE LIGHTS.

We do not think that it is desirable that definite instructions as to the method of fixing the side lights should be issued by the Marine Association. The master is the person who can best decide where the lights must be placed in order to be properly protected from the sea, and not obscured by sails, boats, davits, tackle, or by persons standing in front of them; he will be able to judge in exceptional circumstances whether the lights require to be moved in order that they may be properly secured, and show in the manner prescribed by the regulations, &c. The master should therefore, be left responsible for the proper method of fixing the lanterns, and the only step taken should be to insert in the Collision Regulations some general directions similar to those issued by the English Board of Trade (*see* p. 4 of the "Journal of Hydrography and Marine Meteorology" for January 1893); or else instructions tending in this direction might be given by the German Lloyd to the agents of the Marine Association.

II.—THE SCREENING OF SIDE LIGHTS.

A thorough examination of this question has convinced us that the instructions issued by the Board of Trade constitute a substantial improvement. Our reasons for this opinion will be found in the following considerations:—

The substance of the Imperial Ordinance of the 7th January 1880, on the construction and screening of side lights, is that "side lights must be visible for at "least two miles, and must show a uniform and un- "broken light over an arc of the horizon of 10 points "of the compass, from right ahead to two points abaft "the beam. These lights must be fitted with inboard "screens projecting at least 1 metre forward of the "light, and so fixed as to prevent the light from being "seen across the bow."

This rule, which is based on an international agreement on the subject of the construction and screening of side lights, is in itself perfectly clear, and could not possibly cause misunderstanding if it were practicable to carry it out exactly with existing side lights. We have, however, to take into consideration the construction of the lantern and of the lamp inside it. In accordance with the law of the diffusion of light in straight lines, every illuminated point can be seen from any other point if no opaque body intervenes in the straight line which connects them. In the case of the lamps in ships' lanterns, however, we have not got to deal merely with a single illuminated point, but, not to speak of the diffused light, with a series of illuminated points; and all these points, whether they are arranged in circles, as is the case with round burners, or in straight lines, as is the case with flat burners and electric lamps, send out direct rays.

To thoroughly investigate this question of screening it is necessary to discuss the construction of the lanterns and the screening of the lights separately.

(a.) *Construction of the Lanterns.*

In side lights different kinds of burners can be distinguished. The commonest are—

1. Round burners for petroleum, at least 25 millimetres in diameter, as prescribed in the English regulations.
2. Round burners for colza, at least 45 millimetres in diameter, as prescribed in the English regulations.
3. Flat burners (Imperial Navy) 33 millimetres broad.
4. Incandescent electric lamps.

Now the text of the Ordinance requires that the full and unbroken light shall show from right ahead to two points abaft the beam, *i.e.*, from A to B in Fig. 1.* (This and the following plates represent the starboard lamp.) Therefore the lens of the lantern must extend at least from *a* to *b*, so that the full light may show over an arc of 10 points, and all the illuminated points of the burner may be seen within this arc. Further, the centre of curvature of the lens must be opposite the middle point of the burner. But it must be observed that the outer points of the wick also send their rays to $A_1$ and $B_1$, so that the light, though perhaps not in its full volume, is visible over an arc of the horizon of about 12 points, an angle which, according to the report of Captain Maack, has been actually observed in many cases. And this is the only way in which the lights can be arranged if they are to comply with the Imperial Ordinance; if they are arranged differently they will not show a full and uniform light over an arc of 10 points.

In the form of the side lights, considerable variations are often found. These variations make it appear that

* Plate IX.

FIG. 1.

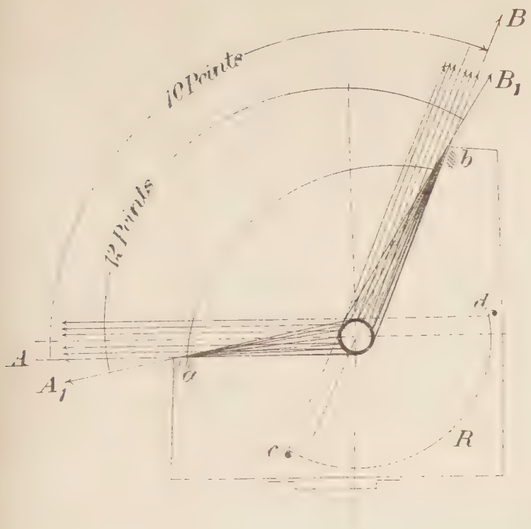



FIG. 2.

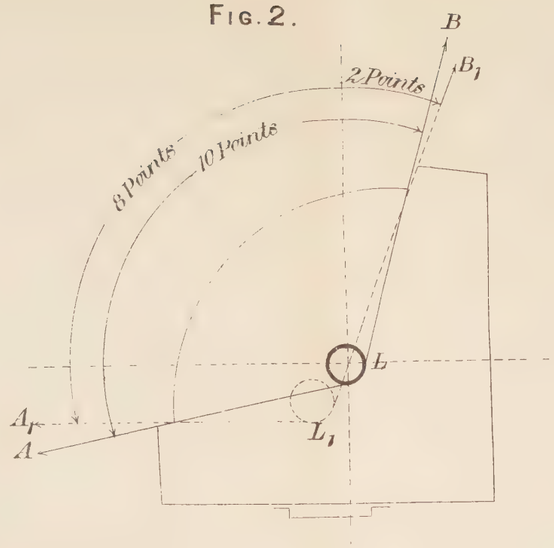



FIG. 5.

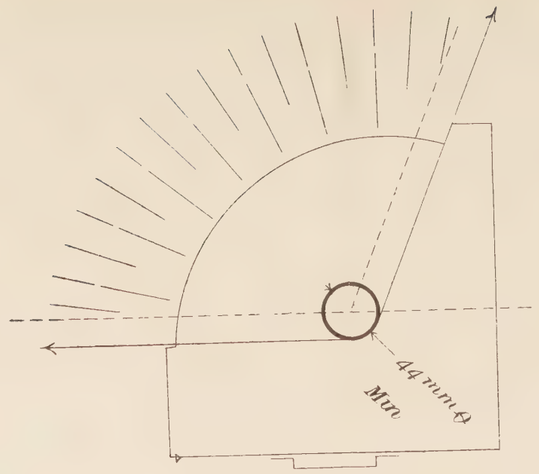



FIG. 6.

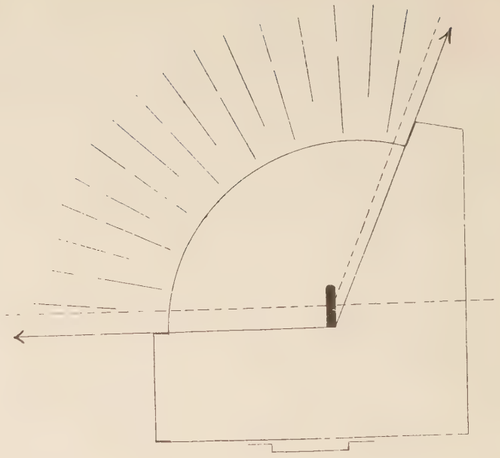


FIG. 3.

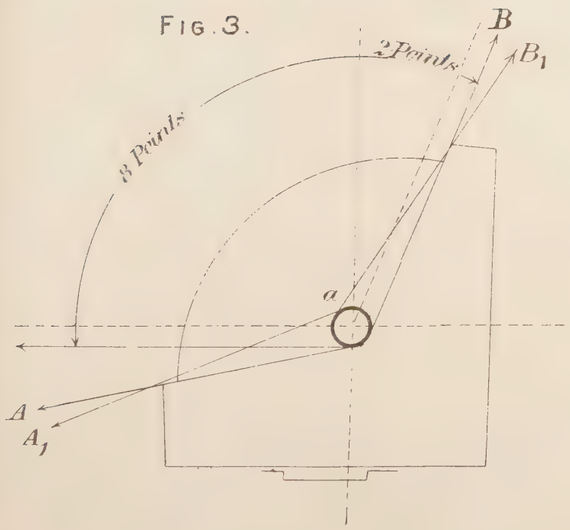



FIG. 4.

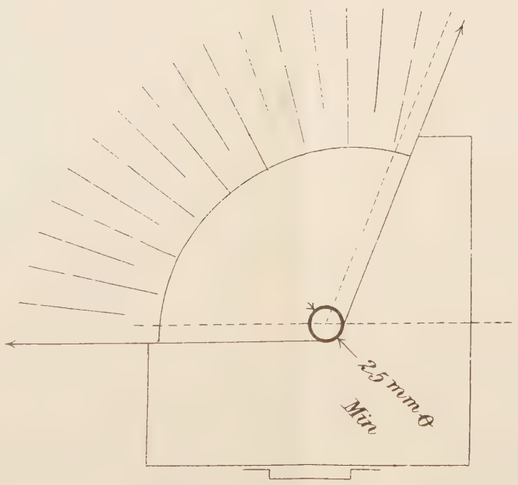



FIG. 7.

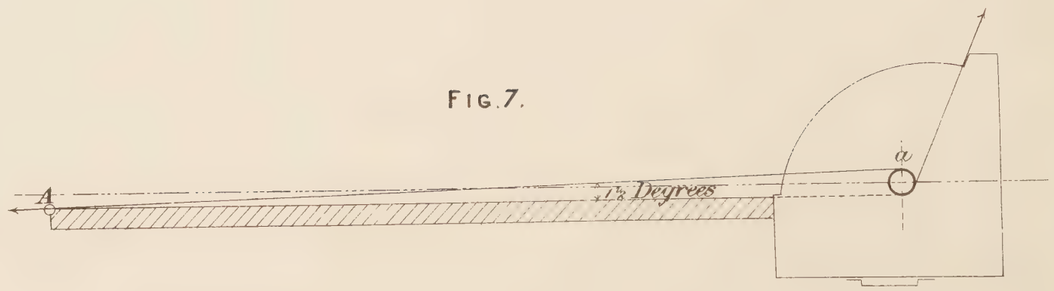
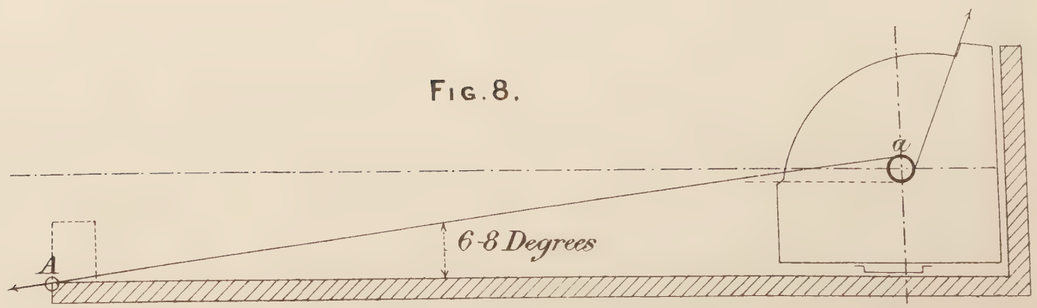
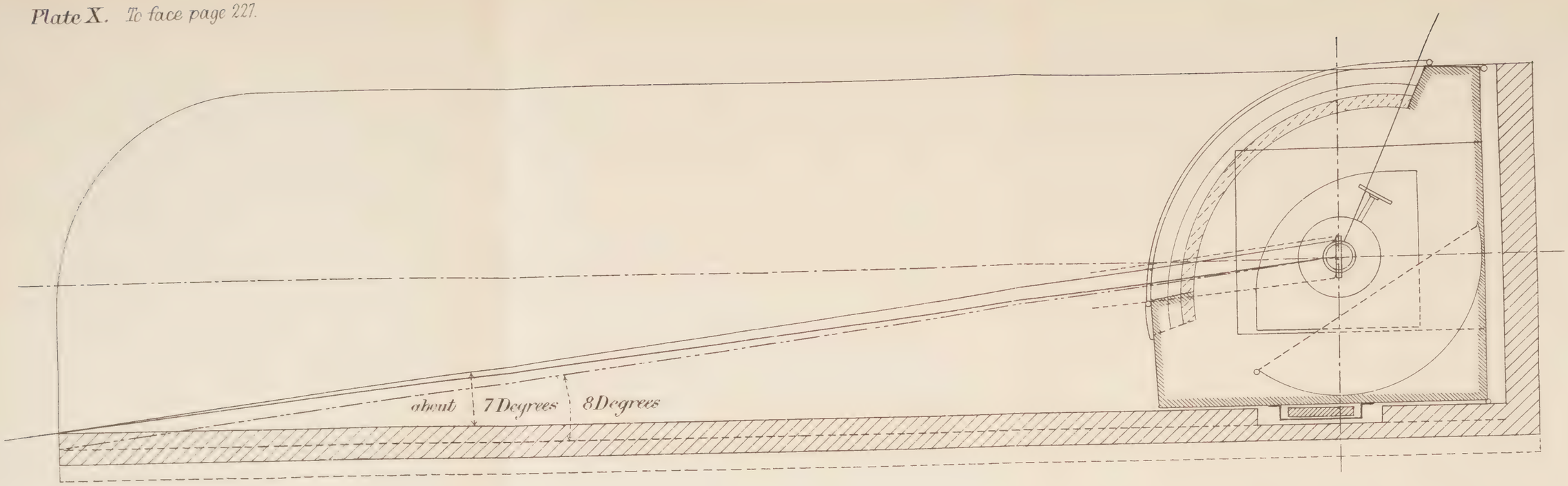


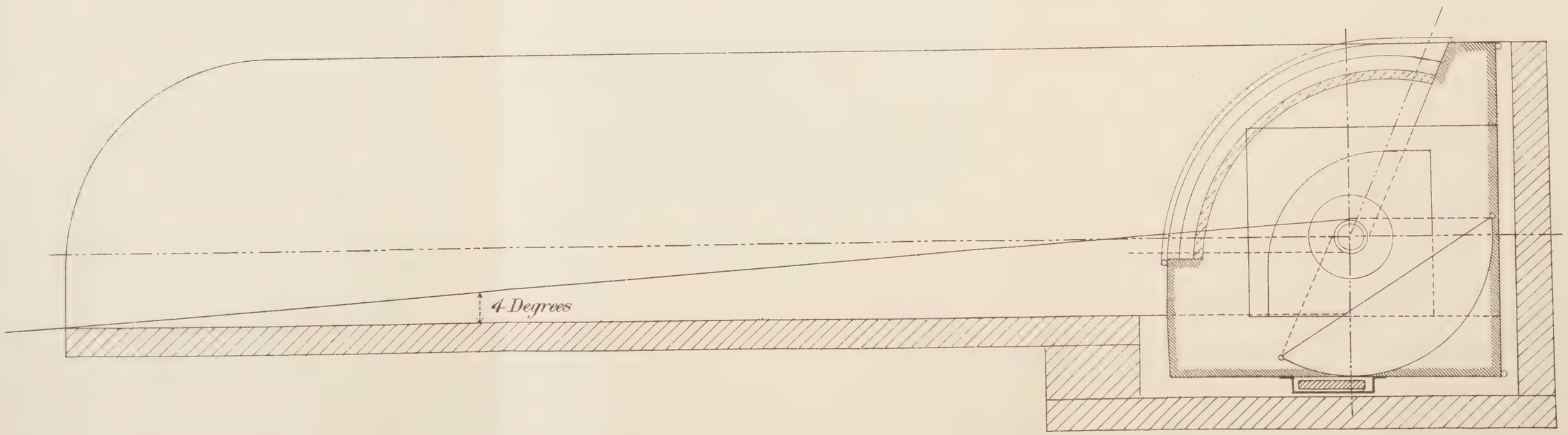

FIG. 8.




WYMAN AND SONS LTD LITH 7160. 5.95

*Plate X.* *To face page 227.*




WYMAN AND SONS LTD LITH. 9/60.5.95.

the manufacturers start with the erroneous idea that the interior of the lantern is one large source of light, and that it is only necessary to place the lamp somewhere inside the lantern in order to produce the desired effect. In Fig. 2, for example, the lamp is placed at L, and the light will show over the arc A B; the rays, however, will not run parallel to the keel, but will cut the line of the keel projected ahead of the ship, and will not reach to two points abaft the beam. But if the lamp is placed instead on the dotted line at $L_1$, the full uniform light will show from $A_1$ to $B_1$; the arc is still only 10 points, but it now extends from right ahead to two points abaft the beam, and the lanterns comply with the requirements of the Regulations.

A pattern of lamp which is as often met with is that represented in Fig. 3. Here the light shows over a much larger angle than 10 points, including the two points abaft the beam. The rays from the outer edge *a* of the wick (Fig. 3) extend over the arc from $A_1$ to $B_1$, that is over a much greater angle than 10 points. This, however, is not a serious fault, since the rays which pass ahead of the light must be regulated by means of a screen. Even the lantern in Fig. 2 can be made use of, for it can be so turned as to show over the two points abaft the beam. In practice, however, attention is not usually paid to this point when the lights are being fixed, so the lanterns should be all so arranged that their after sides stand at right angles to one another, and that one of these sides is exactly parallel to the line of the keel.

In placing the lamp in the lantern, care must also be given to the position of the spherical reflector at the back of the lantern (*see* R in Fig. 1). The centre of the burner must be opposite to the centre of the reflector, and the reflector must be large enough to reach from *c* to *d* in Fig. 1, so that the rays may be seen in their full strength over the above-mentioned arc of 10 points. In many cases the reflectors are small and damaged, and can only be expected to show properly over an arc of from two to six points.

Lanterns of this type, with improperly placed lamps and defective reflectors, are still manufactured and used.

Still further variations in the patterns of side lights might be adverted to, but the extreme cases already dealt with are sufficient to show that all lanterns do not comply with the legal requirements. The points to be observed in examining a lantern are not merely whether the illuminating power is sufficient, and whether the ventilation of the lamp, and its security against being blown out by the wind, and its general working, are satisfactory; but also whether the position of the lamp in the lantern has been rightly chosen, and will secure that the rays from the lantern fall within the prescribed angle. This object will be best attained by direct measurement of the angle at the lantern, and not by observation of the actual rays, because in observing the rays it is difficult, without special apparatus, to distinguish the reflected rays $A_1$ $B_1$ (Fig. 3), from the direct rays A and B.

We assume that the instructions for testing lanterns which are contemplated by the Imperial Marine authorities will take into account these errors in construction to which we have referred.

To sum up:—

1. The after sides of the lanterns must stand at right angles to one another, and one of these sides must be exactly parallel to the middle line of the ship.
2. The lamp must be so placed in the lantern that all the rays from the wick can throw an uninterrupted light through the lens parallel to the keel ahead of the ship, and as far as two points abaft the beam. The way in which this is to be done is shown in—
   Fig. 4, for petroleum and electric light.
   Fig. 5, for colza.
   Fig. 6, for flat burners.

A larger arc than 10 points of the compass is admissible, but the excess must be in the direction [illegible] of the lamp, and not abaft the beam (Fig. 3).

[illegible]

The [illegible] with the line of the keel by a line drawn from [illegible] be about 4°.

A [illegible] regulation of the Board of Trade opposition has been raised on various sides. (*See* a series of articles in the *Nautical Magazine* for 1893, pp. 118, 200, 242, 245, 421, 497, 740, 940: Proceedings at the General Meeting of the German Nautical Union, 1894, p. 75 *sq.*; the report of the Columbus Shipping Union of Bremen, &c., &c.) The Netherlands Government even sees in this rule an infringement of the International Regulations, and is of the opinion that Netherlands judges would condemn ships in collision cases whose lanterns were screened in this manner. Further, eminent English counsel describe the Order as a "rule "that is in direct conflict with the International Rules." (*See* Blue Book C.–6869.) From the following explanations it will nevertheless be seen that this rule is simply intended to secure the carrying out of the Regulations. Apr. 2, No. 11

In most cases the critics take up the position that the 4° angle is much too large, and that it would be, therefore, better to leave things as they were under the old system.

But, when we consider clearly what would happen if the angle were made as small as possible, *i.e.*, if the screen were fixed parallel to the keel in a line with the inner edge of the wick (Fig. 7), we find that with screens 1 metre long, the outermost direct rays from point (*a*) of the wick will be visible across the forward end of the screen, and that with—

a round wick 25 millimetres in diameter the angle will be about 1½°.
a round wick 44 millimetres in diameter the angle will be about 2½°.
a flat wick 33 millimetres broad the angle will be about 2°.

The angle cannot be reduced beyond this point, because a smaller angle would render it impossible to comply with the requirement of the Regulations as to the light being uniform.

On the other hand, if we examine the system of screening now prevalent on board the great majority of non-English ships, we find that it is effected by means of screens which are ordinarily fixed at a distance of 100 to 140 millimetres from the outer edge of the wick (Fig. 8), and we reach the conclusion that in the majority of non-English ships the angle is from 6° to 8°, that is, from one-half to three-quarters of a point.

It is clear that the critics who think 4° too large, and prefer to retain the old system, are not thoroughly aware of this fact. In any case they proceed on the erroneous idea that the present angle is a little over nil, and at all events is under 4°, whereas in reality it is nearly twice that angle.

It is not possible to say with absolute exactness what the best angle would be, but the numerous discussions and reports on this subject entitle us to assume that the angle of 6° or 8°, which is at present actually found on most non-English ships, is far too large, and that a smaller angle of 3° to 4° would better tend to the safety of navigation.

We should not hesitate to recommend the extension to German ships of screening regulations on the lines of those issued by the English Board of Trade, if it were not for the fact that at the present moment these regulations are meeting with considerable opposition in England. We therefore propose to wait in order to see whether any valid technical arguments will be brought forward which will induce England to repeal these Instructions. Failing that, it is our opinion that the Government should be moved to add the following interpretative clause to the Imperial Ordinance of the 7th January 1880.

"The line drawn from the outer edge of the wick through the foremost edge of the screen shall form an angle of approximately 4° with the line of the keel."

### Concluding Remarks.

Coming now to the mode of carrying out this regulation, we notice that the necessary alterations in the existing screens could be made without the least difficulty.

It is only necessary to fix on the forward end of the screen (as shown in dotted lines at A in Fig. 8) a piece of wood so arranged as to be 70 millimetres distant from the outside edge of the wick, where the screen is 1 metre long, and proportionately further away with screens of greater length.

We attach two full-sized* diagrams, the upper one of which illustrates the usual method of screening followed at present, and the lower one the method of screening to an angle of 4°. In new ships, the screen

* Note.—These diagrams have apparently been reduced. *See* Plate X.

App. 2, Nos. 10 and 11.

should be arranged exactly in the manner shown in the lower diagram.

Finally, we must point out that the distance of the lamp from the inner side of the lantern is not the same in all cases, because all lanterns are not made on a uniform plan. Consequently, when a lantern fails and has to be replaced by another of a different make particular care has to be taken to see that the outer edge of the wick in the second lantern is situated at the proper distance from the screen.

This difficulty would be best avoided if the Imperial Marine authorities, on the strength of their great experience of the construction of side lights, would prepare a pattern which should serve as a model to the manufacturers. The manufacturers would then cease to work disconnectedly, each according to his own pattern, and would eventually produce lanterns not only complying with the Regulations, but differing from one another so slightly that no alteration in the screens would be necessary if the lanterns happened to be changed.

German Lloyd.
(Signed) Middendorf. Ulrich.

Berlin, 24th January 1895.

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No. 11.—Report by the Assistant Superintendent of Experiments at Shoeburyness on the Experiments of October 1893.

17th October 1893.

*Subject.—Trial of Ships' Side Lights, Report on.*

These tests were carried out in the presence of several members of the Rule of the Road Committee.

On the first night (October 12th) the weather was unfavourable, the atmosphere being thick. The tests on this night were confined to distances of 2,000 yards and under, and one pair of lamps were used throughout. This pair was marked H, particulars as follows:—

| Maker. | Wicks—No. | Chimney. | Lens. | Oil. |
|---|---|---|---|---|
| Starnes and Sons - | 1 | Yes - | White dioptric with coloured slide. | Paraffin. |

The result of the observations is shown in the attached Tables marked A and B.

On the second night (October 13th) four pairs of lamps were subjected to trial, and the pair tested on 12th October were exhibited in a conspicuous position, showing about five points, to serve as a standard for comparison.

The lamps tested were marked A, E, F, and Admiralty respectively, particulars as follows:—

| Maker. | Wicks—No. | Chimney. | Lens. | Oil. |
|---|---|---|---|---|
| A: Andreasen - | 1 | Yes - | White dioptric with coloured slide. | Paraffin. |
| E: Ridsdale - | 2 | Yes - | Dioptric coloured glass. | „ |
| F: W. and A. Nunn | 1 | Yes - | Fish bowl, coloured glass. | „ |
| Admiralty - - | 2 | No - | White dioptric with coloured slide. | Colza. |

As a preliminary experiment the four green lights were exhibited at the same time, all showing about five points. It was noted that the green of the Admiralty lamp appeared lighter than the others at short distances, but this difference became less marked as the distance increased.

Their relative intensity was observed at one mile (2,000 yards), and found to be as follows:—

Best - Admiralty.
2nd - H: Starnes' lamp, used as a standard.
3rd - {A: Andreasen, E: Ridsdale,} about equal.
5th - F: Nunn, hardly visible.

Same lamps again observed in same positions at 2 miles (4,000 yards).

Their relative intensities compared, allotting a value of 10 to the best lamps.

Results:

Best - Admiralty intensity valued at 10.
2nd - H: (Starnes, used as a standard for the observations which followed) - „ 8.
3rd - {A.: (Andreasen) E: (Ridsdale)} „ 5.
5th - F: (Nunn) - - „ 2.

The results of the further observations on this night are shown in attached Tables C and D.

Fred. Elmslie, Major R.A.,
Asst.-Supt. Expts., for Supt. Expts.

A. Results of Testing Ships' Side Lights at Shoeburyness.

| Date of Test. | Distinguishing Mark on Lanthorn. | | Colour of Light. | Angle of Screening. | Appearance of the Light when viewed from Ahead, and at 5 Points from Ahead, at a Distance of 1,000 Yards from the Lamps. | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Ahead. | | Five Points from Ahead. | |
| | | | | | Intensity. | Colour. | Intensity. | Colour. |
| 12th October 1893. | Lanthorns marked "H." Maker's name J. S. Starnes and Sons. Lenses white dioptric with coloured slides. One wick, with chimneys. | H. P. - | Red - | 1° - - | Fair - - | Good red - - | Very good - | Good luminous red. |
| | | H. S. - | Green | 1° - | Indifferent - | Clear green - | Good, but not nearly so bright as the red. | Clear green. |
| | | | | | There is a marked difference in the size of each light when showing at 5 points and right ahead screened to 1°. In the latter case the light appears less than half the intensity that it does in the former. | | | |
| | | H. P. - | Red - | 2° - - | Smaller than at five points. | Good. | | |
| | | H. S. - | Green | 2° - | Do. do. | Do. | | |
| | | H. P. - | Red - | 3° - - | Judged as good as at 5 points. | Do. | | |
| | | H. S. - | Green | 3° - | Judged slightly smaller than at 5 points. | Do. | | |
| | | H. P. - | Red - | 4° - | As good as at 5 points. | Do. | | |
| | | H. S. - | Green | 4° - - | Do. do. | Do. | | |

Does the light show a uniform and unbroken light in colour and power ahead when screened to an angle of 1°, 2°, 3°, and 4°, as compared with its colour and intensity when exhibited to the observer at an angle of 5 points?—No, neither light at this distance.

If it is not uniform, in what respects is its uniformity deficient, and at what angle of screening?—Screened to 4° both lights remain uniform. Screened to 3° the red lamp remained uniform, but the green was thought slightly smaller. Screened to 2° both lamps showed smaller, while at 1° they were markedly smaller than when showing at 5 points.

Notes regarding the Condition of the Weather and Lamps at the time the Tests were made.

Weather.—Calm. Low-lying haze on sands. Nore Light and Sheerness lights quite invisible. Unfavourable for long distance observations.

Lamps.—Were 30′ apart from outside to outside of wick. Both burnt brightly throughout, but flame of green was fish-tailed and not so level as that of the red. The centre of the flame appeared slightly below the centre of the lens.

B.

App. 2, No. 11.

| Date of Test. | Distinguishing Mark on Lanthorn. | Colour of Light. | Angle of Screening. | Distance in Feet from Centre Line to Points on its Right and Left respectively where the Green and Red Lights practically ceased to be visible. Distances in Yards from the Lamps to Point where Measurements taken. 2,000 | | 2,000 | 1,000 | | 1,000 | 500 | | 500 | Distance from the Lamp to the Point where the most convergent Rays cross the Centre Line. | | Distance from the Lamp to the Point on the Centre Line where the Lens ceases to be visible. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Green. | Red. | *Theory.* | Green. | Red. | *Theory.* | Green. | Red. | *Theory.* | Green. | Red. | Green. | Red. |
| 12th October 1893. | Marked "H." Maker's name J. Stokes and Sons. Lenses white or opal with colored sides. Opal was worn chimney. | Red and Green. | 1° | 90 | 90 | *89·8* | 54 to 60 Slight reflected rays just visible up to 150. | 54 to 60 | *37·36* | 21 | 21 | *10·99* | 630 or more. The exact point was difficult to judge. | 630 | 111 | 114 |
| | | do. | 2° | 216 | 210 | *194·6* | 90 | 105 | *89·8* | 42 | 42 | *37·45* | 420 | 420 | 96 | 96 |
| | | do. | 3° | 300 | 306 | *299·4* | 126 | 165 | *142·2* | 60 | 60 to 63 | *63·61* | 225 | 225 | 87 | 87 |
| | | do. | 4° | 399 | 408 | *404·5* | 180 | 201 | *194·8* | 84 | 87 | *89·9* | 136 | 186 | 78 | 78 |

The theoretical distance at which direct rays should cease to be visible to the right and left of the middle line is shown in *red* alongside the observed distances. This theoretical distance was not known beforehand to the observers who were guided solely by the appearance of the lights. The distances at which the two lights ceased to be practically visible was noted by separate parties, one for either flank.

In almost all cases reflected rays from the lens were visible for some distance beyond the points noted, and it was difficult to fix the exact spot of practical disappearance within a yard or two. For instance, at 1,000 yards slight rays from the red lamp, screened to 1°, could be seen through glasses up to 150′ from the middle line.

Notes regarding the Condition of the Weather and Lamps at the time the Tests were made.

Weather.—Calm. Low lying haze on the sands. Nore Light and Sheerness lights quite invisible. Unfavourable for long distance observations.
Lamps.—Were 30′ apart [illegible] outside to outside of wicks. Both burnt brightly throughout, but flame of green was fish-tailed and not so level as that of the red. The centre of the flame appeared slightly below the centre of the lens.
Measurements.—All measurements taken from the centre line midway between the two lamps.

| Date of Test. | Distinguishing Mark on Lanthorn. | Colour of Light. | Angle of Screening. | Appearance of the Light when viewed from Ahead, and at 5 Points from Ahead, at Distances of 3,000 and 4,000 Yards from the Lamps. Ahead. Intensity. | Ahead. Colour. | Five Points from Ahead. Intensity. | Five Points from Ahead. Colour. |
|---|---|---|---|---|---|---|---|
| | | | | Observations at 4,000 Yards. | | | |
| 13th October 1893. | E. P. - | Red - | - - | - - - - | - - - | Good and fully equal to the "H" red lamp used as standard. | |
| | E. S. - | Green | - - | - - - - | - - - | Fair, unmistakably less than "H" green used as standard. | Good green. |
| | Ridsdale Lamps. E. P. - | Red - | 2° - | Very slightly smaller than at 5 points. | Good. | | |
| | E. S. - | Green | 2° - | Apparently exactly the same as at 5 points. Value judged about (5). (Standard (8).) | Good, rather dark green. | | |
| | E. P. - | Red - | 1° - | Much reduced - - | | | |
| | E. S. - | Green | 1° - | Much reduced, hardly visible. Value judged as about (2), (standard being taken as (8)). | | | |
| | E. P. - | Red - | 3° - | Great improvement - | Good. | | |
| | E. S. - | Green | 3° - | Do. value judged at about (7). | | | |
| | E. P. - | Red - | 4° - | No apparent difference in either lamp between 3° and 4° screening. | | | |
| | E. S. - | Green | 4° - | | | | |
| | Andreasen's Patent. A. P. - | Red - | - - | - - - - | - - - | Remarkably poor - | Red, but wanting in luminosity. |
| | A. S. - | Green | - - | - - - - | - - - | Value judged as about (5) the standard being taken as (8). | Good green. |
| | A. P. - | Red - | 4° - | Same as at 5 points - | - - - | No further tests with these lamps, the red being so indifferent. | |
| | A. S. - | Green | 4° - | | | | |
| | | Red - | - - | - - - - | - - - | Good; almost, but not quite equal to standard. | Good clear red. |
| | | Green | - - | - - - - | - - - | Better than standard, judged = (10) (standard (8)). Both lamps very luminous. | Good green. |

App. 2, No. 11.

| Date of Test. | Distinguishing Mark on Lanthorn. | Colour of Light. | Angle of Screening. | Appearance of the Light, when viewed from Ahead, and at 5 Points from Ahead, at Distances of 3,000 and 4,000 Yards from the Lamps. | | | |
|---|---|---|---|---|---|---|---|
| | | | | Ahead. | | Five Points from Ahead. | |
| | | | | Intensity. | Colour. | Intensity. | Colour. |
| | | | | Observations at 4,000 Yards.—*cont.* | | | |
| 13th October 1893. | Admiralty Lamps. Unmarked. | Red | 1° | Both lamps reduced from (10) (at 5 points) to not much more than (4). | Colour of both lamps good. | | |
| | | Green | 1° | | | | |
| | | Red | 2° | Judged = (7) | | No apparent change in appearance, whether screened at 3° or 4°. | |
| | | Green | 2° | Do. = (8) | | | |
| | | Red | 3° | Do. = (8) | | | |
| | | Green | 3° | Do. = (8) | | | |
| | | Red | 4° | Do. = (8) | | | |
| | | Green | 4° | Do. = (8) | | | |
| | Nunn's F. P. | Red | | | | Both lamps poor, green especially so. Red judged worth about (4); green about (2). No further tests with these lamps, both being indifferent. | |
| | Nunn's F. S. | Green | | | | | |
| | | | | Observations at 3,000 Yards. | | | |
| | Admiralty Lamps. Unmarked. | Red | | | | Value (9) as compared with standard red (10). | Good. |
| | | Green | | | | Value (9) as compared with standard green (8). | Do. |
| | | Red | 2° | Judged = (7) | Colour good. | No apparent change whether screened at 3° or 4°. | |
| | | Green | 2° | Do. = (7) | | | |
| | | Red | 3° | Do. = (8) | | | |
| | | Green | 3° | Do. = (8) barely | | | |
| | | Red | 4° | Do. = (8) | | | |
| | | Green | 4° | Do. = (8) barely | | | |
| | Ridsdale Lamps. E. P. | Red | | | | Judged = (9) | Good. |
| | Ridsdale Lamps. E. S. | Green | | | | Do. = (6), not very luminous. | Do. |
| | Ridsdale Lamps. E. P. | Red | 2° | Judged = (6) | Colour good. | No apparent change in appearance whether screened at 3° or 4°. | |
| | Ridsdale Lamps. E. S. | Green | 2° | Do. = (5) | | | |
| | Ridsdale Lamps. E. P. | Red | 3° | Do. = (7) | | | |
| | Ridsdale Lamps. E. S. | Green | 3° | Do. = (7) | | | |
| | Ridsdale Lamps. E. P. | Red | 4° | Do. = (7) | | | |
| | Ridsdale Lamps. E. S. | Green | 4° | Do. = (7) | | | It is noteworthy that this green lamp did not show so well at 5 points as it did right ahead when screened at 3° and 4°. |
| | "H" Lamps. H. P. | Red | | | | Judged = (10) | Very good. |
| | "H" Lamps. H. S. | Green | | | | Do. = (8) | |
| | "H" Lamps. H. P. | Red | 2° | Perfectly visible. Could not be allotted marks owing to there being now no standard of comparison. | Colours good. | | |
| | "H" Lamps. H. S. | Green | 2° | | | | |
| | "H" Lamps. H. P. | Red | 3° | Both slightly larger than when screened to 2°. | | | |
| | "H" Lamps. H. S. | Green | 3° | | | | |
| | "H" Lamps. H. P. | Red | 4° | Same as at 3°. | | | |
| | "H" Lamps. H. S. | Green | 4° | | | | |

Does the light show a uniform unbroken light in colour and power ahead when screened to an angle of 1°, 2°, 3°, and 4° as compared with its colour and intensity when exhibited to the observer at an angle of 5 points?—None of the lights tested did this.

If it is not uniform, in what respects is its uniformity deficient, and at what angle of screening?—None of the lights appeared to attain as great intensity right ahead at any angle of screening as they did at 5 points, with the exception of the green "E" lamp, which showed better right ahead when screened 3° and 4° than at 5 points. The angle of screening also made a difference in the uniformity of the light, the 1° screen greatly reducing its size.

Notes regarding the Condition of the Weather and Lamps at the time the Tests were made.

Weather.—Dark night—no moon—clear—Nore and Mouse Lights, Sheerness lights, and lights in Channel all visible. Very favourable for long distance observations.

Lamps.—Were 30′ apart from outside to outside of wick. All in good order and correct.

D.

App. 2, Nos. 11 and 12.

| Test. | Distinguishing Mark on Lantern. | Colour of Light. | Angle of Screening. | Distance in feet from Centre Line to Point on its Right and Left respectively, where Green and Red Lights practically ceased to be visible. | | | | | | Distance from the Lamp to the Point where the most convergent rays cross the centre line. | | Distance from the Lamp to the Point on the Centre Line where the Lens ceases to be visible. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Distance in Yards from the Lamps to the Point where Measurements were taken. | | | | | | | | | |
| | | | | 4,000. | | 4,000. | 3,000. | | 3,000. | | | | |
| | | | | Green. | Red. | *Theory.* | Green. | Red. | *Theory.* | Green. | Red. | Green. | Red. |
| 18th October 1893. | Iddesdale Lamps. | Green and Red | 1 | Not observed - | Not observed - | *194·5* | | | | | | | |
| | | Do. - | 2° | Very faint at 360 - Out at 390 - - | Very faint at 330 - Out at 375 - - | *404·* | | | | | | | |
| | | Do. - | 3° | Faint at 450 - - Useless at 540 - Out before 600 - | Faint at 495 - - Out at 540 - - - - - | *613·9* | | | | | | | |
| | | Do. - | 4 | Faint at 750 - - Out at 840 - - | Faint at 690 - - Out at 735 - - | *824·1* | | | | | | | |
| | Admiralty unmarked | Do. - | 4° | - - - | - - - | - - | Faint at 570. Out at 600 | - - | *614·3* | | | | |

NOTES regarding the CONDITION of the WEATHER and LAMPS at the time the Tests were made.

WEATHER.—Dark night—no moon—clear. Nore and Mouse Lights, Sheerness lights, and lights in Channel all visible. Very favourable for long distance observations.

LAMPS.—Were 30 feet apart from outside to outside of wick. All in good order and correct.

MEASUREMENTS.—All measurements taken from the centre line midway between the two lamps.

## No. 12.—ORDER in COUNCIL of JANUARY 30, 1893.

At the COURT at OSBORNE HOUSE, ISLE OF WIGHT, the 30TH DAY of JANUARY, 1893. Present, THE QUEEN'S MOST EXCELLENT MAJESTY IN COUNCIL.

Whereas, by an Order in Council made in pursuance of the Merchant Shipping Act Amendment Act, 1862, and dated the 11th day of August, 1884, Her Majesty on the joint recommendation of the Admiralty and the Board of Trade was pleased to direct that on and after the 1st day of September, 1884, the Regulations contained in the Schedule thereto should, so far as regards British ships and boats, be substituted for the Regulations contained in the First Schedule to an Order in Council made as aforesaid, and dated the 14th day of August, 1879.

And whereas by two Orders in Council made in pursuance of the said Act, and on such joint recommendation as aforesaid, and dated respectively the 30th day of December, 1884, and the 24th day of June, 1885, certain modifications and additions were made to the said Regulations contained in the Schedule to the said recited Order in Council of the 11th day of August 1884, as regards British fishing vessels and boats.

And whereas by another Order in Council made in pursuance of the said Act and on such joint recommendation as aforesaid, and dated the 18th day of August 1892, certain modifications and additions were made to the said Regulations contained in the Schedule to the said recited Order in Council of the 11th August 1884, as regards steam pilot vessels.

And whereas by the said Regulations contained in the Schedule to the said Order in Council of the 11th day of August, 1884, it is amongst other things provided as follows—

Art. 3.—A sea-going steam ship when under way shall carry—

(*a.*) On or in front of the foremast, at a height above the hull of not less than 20 feet, and if the breadth of the ship exceeds 20 feet, then at a height above the hull not less than such breadth, a bright white light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the ship, viz., from right ahead to two points abaft the beam on either side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least five miles.

(*b.*) On the starboard side, a green light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible on a dark night with a clear atmosphere, at a distance of at least two miles.

(*c.*) On the port side, a red light, so constructed as to show an uniform and unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side, and of such a character as to be visible on a dark night, with a clear atmosphere, at a distance of at least two miles.

(*d.*) The said green and red side lights shall be fitted with inboard screens projecting at least three feet forward from the light, so as to prevent these lights from being seen across the bow.

Article 15.—If two ships under steam are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other.

This article only applies to cases where ships are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two ships which must, if both keep on their respective courses, pass clear of each other.

The only cases to which it does apply are, when each of the two ships is end on, or nearly end on, to the other: in other words, to cases in which by day, each ship sees the masts of the other in a line, or nearly in a line, with her own; and by night to cases in which each ship is in such a position as to see both the side lights of the other.

It does not apply by day, to cases in which a ship sees another ahead crossing her own course; or by night, to cases where the red light of one ship is opposed to the red light of the other, or where the green light of one ship is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light, is seen ahead, or where both green and red lights are seen anywhere but ahead.

And whereas there has been doubt or misapprehension concerning the effect of the said two articles; and whereas the Admiralty and the Board of Trade have jointly recommended to Her Majesty to make the following additions to the said Regulations for the purpose of explaining the said recited articles, and of removing the said doubt or misapprehension:

Now, therefore, Her Majesty, by virtue of the powers vested in Her by the said Act, and by and with the advice of Her Privy Council, is pleased to direct that, from the date of this Order, the Regulations contained in the Schedule to the said Order in Council of the 11th day of August 1884, shall be further modified by the addition to the said recited Article 3 of the provisions contained in the Schedule hereto.

HERBERT M. SUFT.

App. 2, Nos. 12 and 13.

SCHEDULE.

(*e.*) To ensure that the red and green side lights shall show an uniform light from right ahead of the ship to two points abaft the beam on the port and starboard sides respectively, and shall not show across the bow of the ship itself, the said lights must be fixed and the screens fitted so that the rays from the red and green lights shall cross the line of the ship's keel projected ahead of the ship at a reasonable distance ahead of the ship.

With regard to all vessels whose lights are inspected by the officers of the Board of Trade, the red or green side light will not be deemed to be fixed and fitted in accordance with the Regulations unless it is so fixed and screened that a line drawn from the outside edge of the wick to the foremost end of the inboard screen of such light shall make an angle of 4 degrees, or as near thereto as may be practicable, with a line drawn parallel with the keel of the ship from the outside edge of the wick.

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## No. 13.—Further MEMORANDA on the SCREENING of SIDE LIGHTS by SIR DIGBY MURRAY.

### A.—*Colour as affecting the Distant Visibility of the Red and Green Lights, and also the Transverse Distance to which they may be Visible from the Middle Line.*

#### (1.) IN CLEAR WEATHER.

*Red.*—55 to 65 per cent. of the white light is absorbed when covered by a red plate, *i.e.*, only $\frac{3}{5}$ of the light remains.

*Green.*—75 to 85 per cent. of the white light is absorbed when covered by a green plate, *i.e.*, only $\frac{1}{5}$ of the light remains.

#### (2.) IN THICK WEATHER.

*Red.*—From 50 to 60 per cent. of the white light is absorbed; in this case the red is absorbed in smaller proportion than the white.

*Green.*—The green light, on the contrary, is absorbed in a greater proportion than the white, probably increasing from 75 and 85 per cent. to 80 and 90 per cent.

There was a striking confirmation of this in the experiments of June 1891, when a green light which was visible at 43 ft. 9 in. from the middle line at a distance of 815 feet from the lights was only visible 42 ft. 3 in. at a distance of 1,200 feet from the lights, although theoretically it ought to have remained visible for double that distance; the weather on this occasion was not very thick, but the observers were aware, owing to the fluctuating brilliancy of the lights, that light mist was occasionally being driven across the face of the lamps.

From the above it is evident that the visibility of the lights from the middle line will fluctuate, not only with the variations of colour, both of the red and also of the green lights, but also under different atmospheric conditions.

It is also certain that they will vary—

(*a.*) With the description of lens.

(*b.*) With the construction of the lanthorn, the position of the wick with reference to the chord of the arc, and more especially with its position in the lanthorn, *i.e.*, according as its centre is the centre of curvature of both the lens and the reflector, or according to the extent to which it deviates from that position.

They will also vary with the difference of trimming, the difference of compression of the wicks, and with the ventilation of the lanthorn.

On these points the Committee may wish to hear expert evidence, as I am only quoting from Mr. Kenward as to the effect of colour.

If it is suggested that the present angle of 4° should be reduced, it will, I think, be for consideration whether the Board of Trade should not have statutory power to prohibit the use of plano-convex and fish-globe lenses, and also to insist on some general principles of construction. The trade should be interfered with as little as possible, and the makers might be invited to assist in framing the rules.

Before absolutely condemning plano-convex and fish-globe lenses it would be desirable to test them by further experiment.

On the allegation that an angle of 4° is productive of danger, I propose to treat separately.

### B.—*Alleged Danger of Screening the Side Lights to an Angle of 4°.*

The regulations are as follows:—

Art. 15. If two ships under steam are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other.

This article only applies to cases where ships are meeting end on, or nearly end on, in such a manner as to involve risk of collision, and does not apply to two ships which must, if both keep on their respective courses, pass clear of each other.

The only cases to which it does apply are, when each of the two ships is end on, or nearly end on, to the other; in other words, to cases in which, by day, each ship sees the masts of the other in a line, or nearly in a line, with her own; and by night, to cases in which each ship is in such a position as to see both the side lights of the other.

It does not apply, by day, to cases in which a ship sees another ahead crossing her own course; or by night to cases where the red light of one ship is opposed to the red light of the other, or where the green light of one ship is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light, is seen ahead, or where both green and red lights are seen anywhere but ahead.

It may be a matter of doubt as to what is meant by "ahead," and this question is at present in a most unsatisfactory condition (*see* Marsden's "Collisions at Sea," pages 424–425). For the purpose of this discussion, I will assume that no vessel which is broader on either bow of another vessel than 4° is to be considered as "meeting end on, or nearly end on." It is quite clear that when any vessel is steering directly for any other vessel, all her lights will be seen by that vessel, no matter what her bearing may be.

But it is expressly forbidden to port to these vessels under Article 15, when their lights are seen anywhere but ahead. Now let us suppose that a vessel is always to port when both side lights of another vessel are visible at an angle not exceeding 4° on either bow, and when, in the case of steamships, the masthead light is also visible. I wish to select for the purpose of this consideration the position in which the alleged danger is the greatest, and that must evidently be in the case where the departure from the original course is most considerable, and where the transverse distance to be traversed under port helm is the greatest.

It is quite evident that this will not be the case when two vessels see all the lights respectively of one another on their port bow, as if they port they will never cross the track one of another.

When two vessels see each other's lights on the starboard bow, it is quite clear that the most crucial position is when the vessels bear 4° from each other, and also when their courses are parallel to one another, as if their courses converge the transverse distance to be crossed under port-helm will be less.

The accompanying diagram* shows this extreme position.

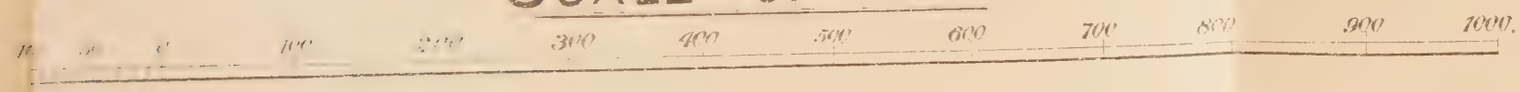
If the vessels forge another ship's lengths ahead, neither of them would see all the lights of the other.

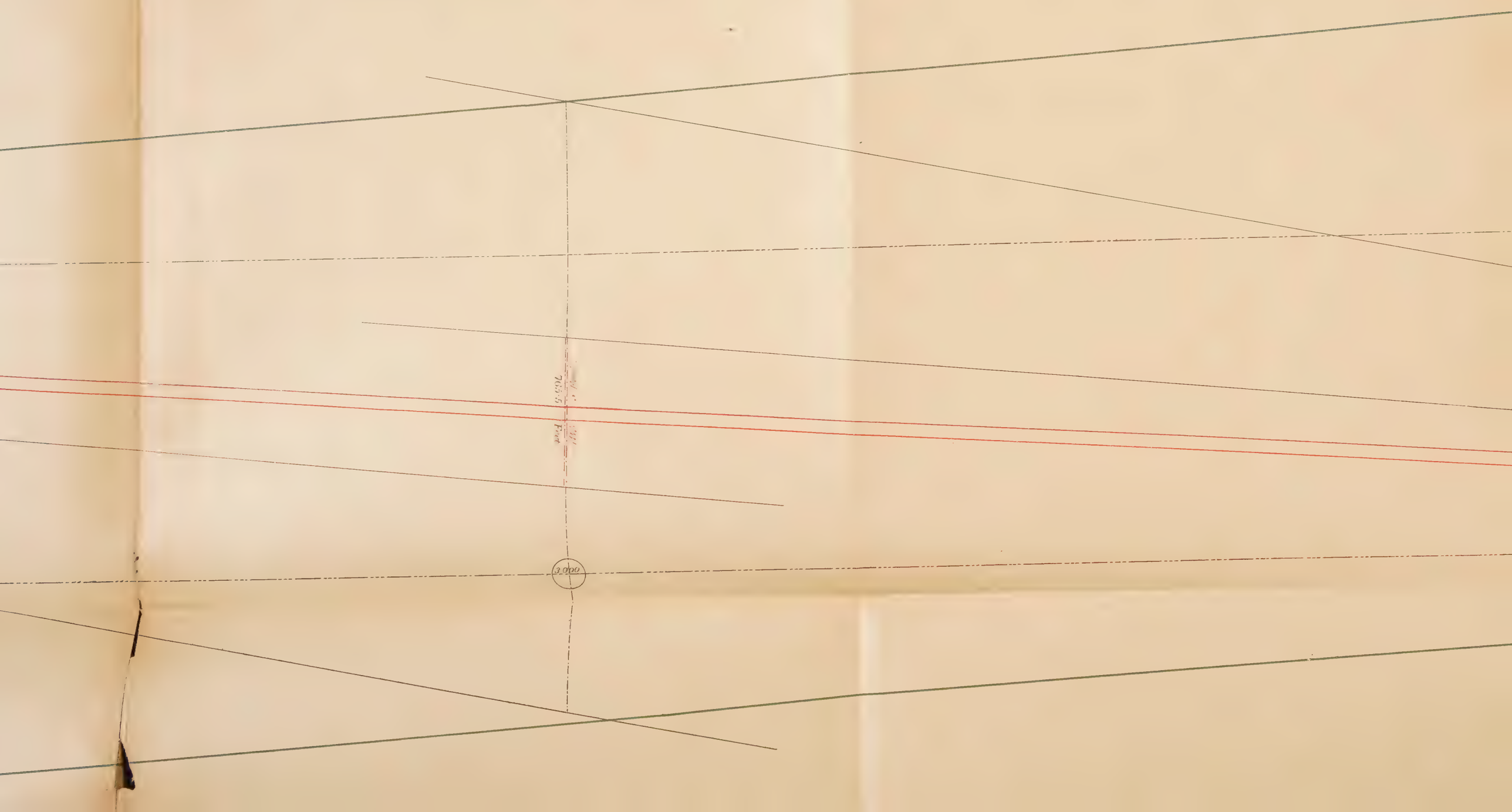
In the diagram the ships are 6,000 feet, or one sea mile apart; but I will in addition give the exact figures applicable both to that distance, to half that distance, *i.e.*, half a sea mile, and to a quarter that distance, *i.e.*, a quarter of a sea mile.

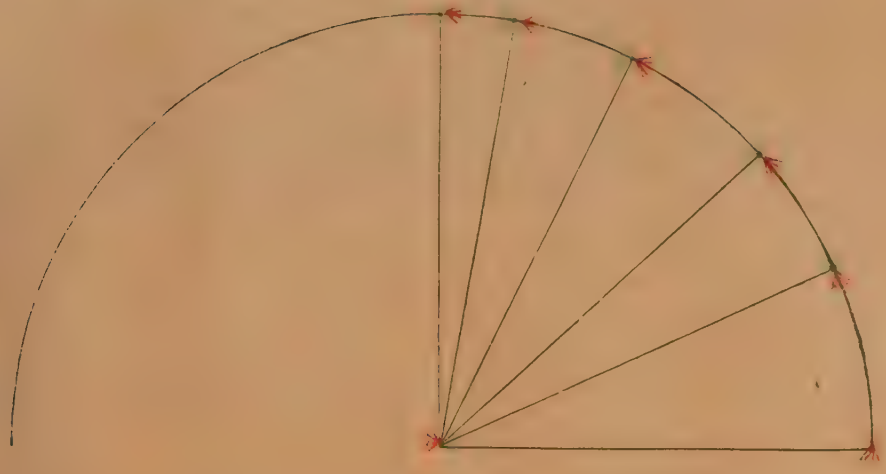
* Plate XI.

*Diagram showing it is not dangerous to screen lights to an angle of 4°*
*If the two ships shown in the diagram port only half a point they pass clear of one another; if they port one point they pass 765·5 feet clear of one another.*

SCALE OF FEET.





Before referring to the diagram, I think I may safely say that no officer in charge of a vessel's deck would be likely to port half a point only; to clear another vessel he would rarely port as little as one point, unless the movements of his vessel were complicated by the proximity of other vessels or the land.

In the diagram I have supposed both vessels to have equal speed, but the result will not be affected by difference of speed as the smaller departure made by the slower vessel will be counterbalanced by the larger departure of the faster vessel.

I do not wish it to be understood, because I am showing the exact results on the diagram, that I am therefore advocating small helm. I think, when circumstances permit, helm should be given at the earliest possible moment, and plenty of it.

In conclusion, I may say that I cannot see any possible danger in screening to an angle of 4°, and that the Board of Trade practice for the last 30 years has failed to indicate it.

D. Murray.

November 7th, 1893.

Tabulated Statement to be attached to Diagram (X).

| Distance from the Lights. | Position of the Vessels with reference to each other. | Theoretical Distance between the Paths of the two Vessels. | Distance between the Vessels when they are abeam of one another, supposing their Speed to be equal, and that they have both ported ½ point. | Distance between the Vessels when they are abeam of one another, supposing their Speed to be equal, and that they have both ported one point. | Remarks. |
|---|---|---|---|---|---|
| | | Feet. | Feet. | Feet. | |
| One sea mile (6,000 feet). | 4° on each other's starboard bow and steering parallel courses. | 404·5 | 180·5 | 765·5 | The results will be approximately proportional for all distances, but the shorter the distance the larger will be the amount of helm which is desirable. |
| Half of a sea mile (3,000 feet). | Ditto - - | 194·8 | 99·2 | 390·2 | |
| 1,500 feet - - | Ditto - - | 89·9 | 57·0 | 202·7 | |

C.—*Danger of screening Lights to a smaller angle than 4°.*

I have shown above that it is not dangerous to screen side lights to an angle of 4°, but that, on the contrary, even in the extreme case where ships are steering parallel courses and bear 4° on each other's starboard bow, it is perfectly safe to port, and that an alteration of course of one point only will enable them to pass abundantly clear of one another.

I now propose to show that to screen the lights to a smaller angle than 4° is distinctly dangerous, as if ships are approaching one another at an angle sufficiently large to prevent both side lights of each ship being seen by the other, but which is small relatively to the direction of each ship, there is no article in the present "Regulations for preventing Collisions at Sea" which applies to them.

They are not crossing ships under Article 16, and even if it was held that this article might be so strained as to apply to two ships on each other's starboard bow, it could not possibly apply to ships approaching one another at the same angles on each other's port bow.

The late Mr. Thomas Gray's verses do not apply to either of these cases, "Green to Green, Red to Red, Perfect safety, Go ahead." On the contrary, if their lights are screened to an angle of 2° and they follow this injunction and keep their courses, collision is practically inevitable, and even if screened to 3° they will under many conditions pass so unpleasantly close as to involve very grave danger of collision.

In Figure 1 of diagram (Y) two ships are shown, A and B. A is a steamship 4° on B's starboard bow, distant ¼ mile, and with her course converging 1½° towards B's, which of course the officer in charge of B's deck is unaware of.

B is steering due W. and A is steering E. 1½° S. As neither of them see the two side lights of the other they presumably keep their course, and if they are of equal speed they will be only distant some 45 feet from each other at the middle distance marked X (always supposing that the ships steer as straight at sea as they can be made to on paper); but if, as will often happen, A has double the speed of B, then the two ships will be distant only 37 feet in the position marked Y.

Figure 2 of this diagram shows two ships A and B steering respectively E. 1½ south and W. 1½ north, *i.e.*, parallel courses; then, no matter what their relative speeds may be, they will, provided they both maintain their course, pass about 25 feet from one another, or so near as to be practically in collision.

App. 2, No. 13 and 14.

It may and probably will be argued that no ship is steered with such absolute accuracy as to admit of only one light being constantly seen at such small angles. This I admit, but what is the officer of the watch of a ship to do when he only occasionally sees a flickering of the second side-light? The Regulations do not provide for this, and, moreover, it must be remembered that the green light will not in the majority of cases be seen at the theoretical distance from the middle line. This the experiments of Mr. Samson and myself, as well as those recently conducted at Shoeburyness, abundantly prove.

In conclusion, I would strongly urge upon the Committee that the side lights of merchant ships cannot safely be screened to a smaller angle than 4°. Should they be altered, and the angle reduced, I cannot too strongly press the necessity of again altering the "Regulations for preventing Collisions at Sea," so as to guard against the dangers which are sure to arise from such a reduction, as well as to indicate to commanders of ships what their action ought to be under the circumstances which I have now indicated.

In diagram (Y) the steamships are represented as having a length of 240 feet and a beam of 30 feet. Vessels of great beam, say, of 50 to 60 feet, if approaching one another as shown in Figure 2 of the diagram, would absolutely be in collision if they maintained their course. *See* diagram (Z).

D. Murray.

November 21st, 1893.

No. 14.—Memorandum by Mr. Samson on Parallel Screening.

Consultative Branch,
Marine Department,
Board of Trade,
Bedford Street, Covent Garden,
London, W.C.,
January 17, 1895.

Sir,

In accordance with your request that I should draw up a memorandum showing the general effect of screening ships' lights in such a manner as to produce, forward of the vessel, a dark parallel lane having a width equal to the distance between the outer edges of the wicks of the lights, I now beg to remark as follows:—

In the Rules for preventing Collisions at Sea it is stated that the coloured side lights of steamers and of sailing vessels must be visible on a dark night with a clear atmosphere at a distance of 2 miles, and show a uniform and unbroken light from right ahead to two points abaft the beam. It is also stated that these lights must be fitted with inboard screens to prevent them from being seen across the bows. There are now no means of knowing the views of those who framed these Rules as to the meaning they attached to the term "right ahead," but as the new system of lighting then introduced was substituted for a system in which there was but one large lamp situated on or near to the bowsprit of the vessel, with a view obviously to its giving a good light ahead, it is, I think, clear that they intended the lights to show ahead of the stem with an intensity at least as great as in any other direction. The term "uniform" in the Rules also shows that they intended the lights to be as clearly visible from ahead as from any other point of the prescribed range, while the condition that they must be visible at a distance of 2 miles proves conclusively that they intended the lights to be good ones.

Moreover, the merest tyro in shipping matters must know that a vessel with lights which either could not be seen, or seen but imperfectly from ahead would be a danger to all other vessels in her proximity.

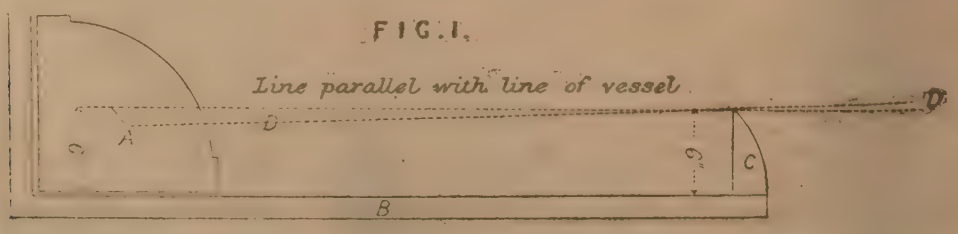
The term "right ahead" in the Rules doubtless means ahead of the stem, not ahead of either light, and if this interpretation be the correct one, the outer rays of the red and green lights must necessarily cross the path of the vessel at some point forward of the stem. This, I may remark, has been the interpretation recognised by the Board of Trade and accepted by the Board's staff since and before I joined the Board's service; and although I am aware that some persons interested in shipping had doubts on the point, I did not know, until the Board's instructions, fixing the angle at which the outer rays of the coloured lights should cross, were issued, that anyone believed it would be dangerous, or even undesirable, to make the lights cross at some point ahead of the vessel.

It, however, now appears from the opposition which has been raised to the present instruction regarding the screening of side lights, that not a few shipowners and others interpret the term "right ahead" to mean ahead of the light, not ahead of the stem, as the Board of Trade have hitherto done. Now, if this interpretation were to be accepted and acted upon, the forward rays of light issuing from the red and the green lamps, which by the present system of screening fall across the vessel's path, would either have to be destroyed by screens or diverted into another direction by the refractive action of some new form of lens, and the result would be a dark parallel lane extending forward of the vessel and having a width equal to the distance between the outer edges of the wicks of the red and green lights. Such lenses are, however, not in existence, and consequently it would be necessary to employ screens. To screen the lights so as to produce the required dark lane (the expression "dark lane" appears to be a product of the Liverpool Steamship Owners' Association) would, however, be impracticable, unless the screens were fitted with chocks; but the latter would have to be of such dimensions as to practically mask the whole of the light when viewed from ahead; and, in consequence of this masking the light would not be of uniform intensity throughout the range prescribed by the Regulations, nor would it be visible at all when viewed from anywhere ahead of the stem. Screens parallel with the middle line of the vessel, but without chocks or other equivalent, would not, even if they were of very great length, keep the forward rays of the lights parallel, and therefore would not fully serve the purpose for which they were intended. The effect of using screens 100 feet in length, of that description, in vessels of different breadths is seen in the following table, the distance from the outer edge of the wick to the outer face of the screen being in each case 6 inches:—

| Distance between the Outer edges of the Wicks of the Lights. | Distance from the Lights to the Point on the Vessel's Path at which the Lights would cross. |
|---|---|
| 20 feet | 2,000 feet = ⅓ mile. |
| 30 „ | 3,000 „ = ½ „ |
| 40 „ | 4,000 „ = ⅔ „ |
| 50 „ | 5,000 „ = ⅚ „ |
| 60 „ | 6,000 „ = 1 „ |
| 70 „ | 7,000 „ = 1⅙ „ |

Figure 1 shows a screen of the regulation length and of the form required to produce a dark lane forward of the vessel, A being the wick of the lamp, B the screen and C the chock. It will be observed, that the distance from the face of the screen to the outer edge of the wick and chock respectively is 6 inches, and that in consequence of this equality the light is completely masked when viewed from ahead.

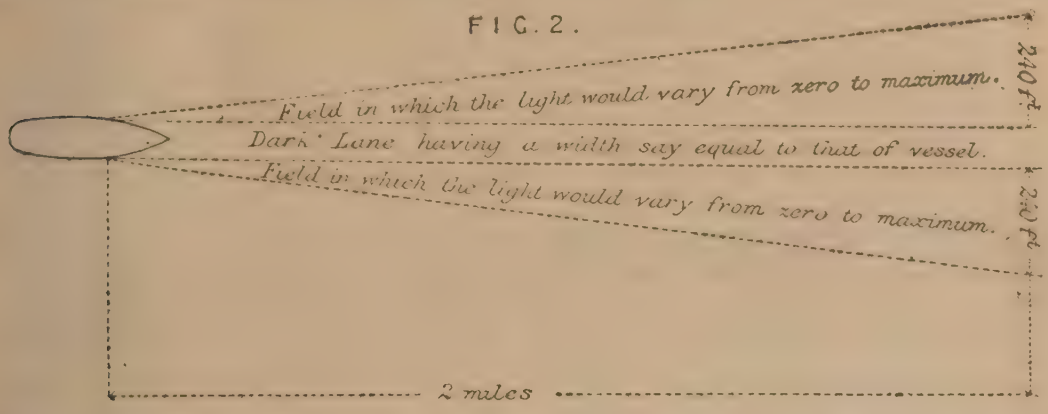
FIG. 1.



If, now, a line DD be drawn from the inner edge of the wick to the outer edge of the chock, the angle formed by it and the line drawn parallel with the middle line of the vessel is the angle through which the light would be of varying intensity. In lamps having wicks 1 inch broad, and placed as in Figure 1, the angle referred to would be about 1° 9′, and the tangent of this angle at a distance of 12,000 feet (2 miles) would be about 240 feet. If, then, the lights were to be screened so as to produce a dark lane forward of the vessel, there would, in addition to the dark lane, be two triangular fields, each not less than 240 feet wide, at a distance of 2 miles from the vessel, in which the brilliancy of the light would vary from zero up to a point approaching the maximum. But lights cannot be screened with absolute precision, and any inaccuracy which might arise from this cause would be just as likely to widen the outer end of the dark lane as to make it narrower.

Figure 2 is a graphic illustration of these conditions, and I think it will require but a moment's consideration to satisfy anyone familiar with the subject that they would not tend to prevent collision at sea, but rather the contrary. An examination of Figure 2

FIG. 2.

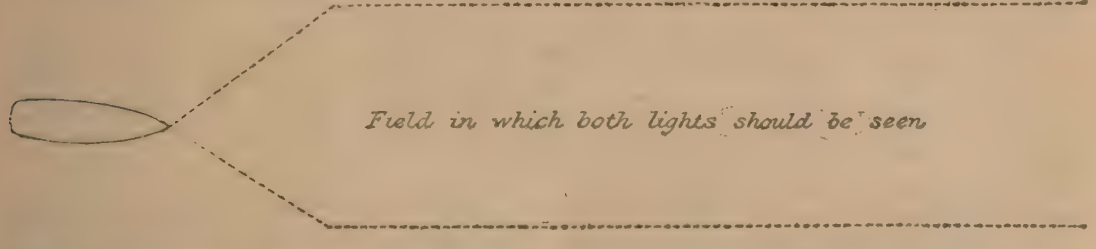

240 ft.
Field in which the light would vary from zero to maximum.
Dark Lane having a width say equal to that of vessel.
Field in which the light would vary from zero to maximum.
240 ft.
2 miles

shows, I think, that those who framed the Rules for Preventing Collisions at Sea, did not use the term "right ahead" to mean ahead of the light, but ahead of the stem, in which case the lights should be arranged to cross at some point ahead of the vessel.

With crossing lights the term "right ahead" is, however, somewhat indefinite, in consequence of the distance from the stem to the crossing point not being stated; but those who framed the rules doubtless intended it to be a reasonable one, for the distance at which the lights of vessels can be seen changes with the condition of the atmosphere as well as from other obvious causes, and it is when the conditions are least favourable in this respect that collisions are likely to occur.

Now, if it be conceded that the lights should cross, the crossing angle chosen by the Board of Trade, viz., 4°, is, I think, the best that could be selected. If the angle were less the width of the field in which both lights are seen would not be sufficient at what may be termed the critical distance, *i.e.*, from a quarter to half a mile from the vessel, and if it were greater the width of the field at a distance, say, of 2 miles from the vessel would be unnecessarily great.

The ideal field in which both lights should be seen is of a rectangular form, thus—




its width being, say, six times that of the vessel, but a field of that form cannot be produced, and to get the necessary width near the vessel in a field of a triangular form the base of the triangle (width of the field at a distance of 2 miles) must be greater than is necessary.

The following table, which is almost identical with one prepared by yourself, shows clearly that when the lights are screened to 4° the width of the field in which both lights are visible is at the critical distance somewhat less than it should be, but, as previously pointed out, this cannot be obviated if the width of the field at the 2 miles distance is to be kept within reasonable limits.

Ships meeting and distant 500 Yards (¼ Mile) from each other, and bearing from the intersection of the extreme outer rays of their side lights 4° and 3°.

| 4° on each other's Bow. | | | 3° on each other's Bow. | | |
|---|---|---|---|---|---|
| Transverse Distance between the outer Edges of the Wicks of the two Lights of each Ship. | Distance between the Paths of the two Ships or Half Breadth of the Field. | Distance they will pass clear of one another, after allowing for their Half Breadths. | Transverse Distance between the outer Edges of the Wicks of the two Lights of each Ship. | Distance between the Paths of the two Ships or Half Breadth of the Field. | Distance they will pass clear of one another, after allowing for their Half Breadths. |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 90 | 60 | 30 | 64 | 34 |
| 40 | 85 | 45 | 40 | 59 | 19 |
| 50 | 80 | 30 | 50 | 54 | 4 |
| 60 | 75 | 15 | 60 | 49 | |
| 70 | 70 | In collision. | 70 | 44 | |

App. 2, No. 14.

Ships meeting and distant 1,000 Yards (½ Mile) from each other, and bearing from the intersection of the extreme outer rays of their side lights 4° and 3°.

| 4° on each other's Bow. | | | 3° on each other's Bow. | | |
|---|---|---|---|---|---|
| Transverse Distance between the outer Edges of the Wicks of the two Lights of each Ship. | Distance between the Paths of the two Ships or Half Breadth of the Field. | Distance they will pass clear of one another, after allowing for their Half Breadths. | Transverse Distance between the outer Edges of the Wicks of the two Lights of each Ship. | Distance between the Paths of the two Ships or Half Breadth of the Field. | Distance they will pass clear of one another, after allowing for their Half Breadths. |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 195 | 165 | 30 | 142 | 112 |
| 40 | 190 | 150 | 40 | 137 | 97 |
| 50 | 185 | 135 | 50 | 132 | 82 |
| 60 | 180 | 120 | 60 | 127 | 67 |
| 70 | 175 | 105 | 70 | 122 | 52 |

In the above it is assumed that both ships keep their course. The figures given are the nearest whole numbers.

The width of the field at a distance of 2 miles is, in the case of a vessel with lights 70 feet apart, 536 yards; consequently its extension on each side of the vessel's path is half that amount, or 268 yards, which is fully 11 beams of the vessel.

I should here mention, however, that it is only on dark nights with a clear atmosphere that coloured side-lights can be seen at a distance of 2 miles, and then the lights are so feeble that it is exceedingly difficult to locate them without the aid of a field glass. Indeed, even with such aid it is by no means an easy matter to find them unless one knows the direction in which the vessel to which they belong is approaching. In view of this fact it is, I think, very improbable that the courses of two steamers meeting, and seeing each other's red and green lights, would be altered by porting their helms when so far apart; it is far more probable that they would approach until the opposing lights were fairly distinct, for, apart from the indistinctness of the lights, the rule requiring two steamers meeting to port their helms is only to be applied when their position involves risk of collision. The records of the Admiralty Courts would, I think, prove that such has been and is now the practice.

The width of the triangular field at a distance of 2 miles from the vessel is, therefore, I think, of little moment, except that it is a measure of its width at lesser distances, say a mile downwards, and it will be seen from the following table that when lights are screened to 4°, the widths at these lesser distances are but moderate:—

| Distance between the outside Edges of the Wicks of the Lights. | Distance from the Lights to the Crossing Point. | Distance from the Lights to the Points in the Field where the Breadth is measured. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ⅛ Mile. | | ¼ Mile. | | ½ Mile. | | ¾ Mile. | | 1 Mile. | |
| | | Half Breadth of Field. | Breadth of Field. | Half Breadth of Field. | Breadth of Field. | Half Breadth of Field. | Breadth of Field. | Half Breadth of Field. | Breadth of Field. | Half Breadth of Field. | Breadth of Field. |
| Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 30 | 215 | 37 | 74 | 90 | 180 | 195 | 390 | 300 | 600 | 405 | 810 |
| 40 | 286 | 32 | 64 | 85 | 170 | 190 | 380 | 295 | 590 | 400 | 800 |
| 50 | 358 | 27 | 54 | 80 | 160 | 185 | 370 | 290 | 580 | 395 | 790 |
| 60 | 429 | 22 | 44 | 75 | 150 | 180 | 360 | 285 | 570 | 390 | 780 |
| 70 | 501 | 17 | 34 | 70 | 140 | 175 | 350 | 280 | 560 | 385 | 770 |

At the higher limit (1 mile), the breadth varies from 770 feet, in the case of a very large vessel, to 810 feet in the case of a small one, the half breadths being 385 and 405 feet respectively, while, at a distance of a quarter of a mile from the lights, the breadth varies from 140 feet in the case of the large vessel to 180 feet in the case of a small one, the half breadth at this distance being only 70 and 90 feet respectively. I may state in this connexion, that the majority of the members of the Maritime Conference at Washington agreed that the coloured side lights should cross ahead of the vessel, and although they did not go so far as to recommend the screening of these lights to a fixed angle, they indicated clearly what their thoughts were on the subject, by passing a resolution admitting of their being screened to an angle not exceeding half a point (5⅝°), which is a greater angle by 1⅛° than that allowed by the Board's printed instructions.

With regard to the opposition from outside to the present system of screening lights, I believe it has arisen solely owing to those taking part in it not being familiar with the manner in which lights have been screened in the past; to a certain indefiniteness in the phraseology of the Regulations for Preventing Collisions at Sea; to a mistaken belief that coloured side lights are distinctly visible at a distance of 2 miles; to their inability, owing to want of the necessary practice, to appreciate the difficulty that would be experienced in screening lights so as to produce a dark lane, and also the dangers that would arise if that system of screening were adopted, even if great accuracy of screening could be attained.

I may add, in conclusion, that the effect of the Board's present instructions regarding coloured side lights has been to make certain what was uncertain and indefinite; to promote uniformity of practice amongst the surveyors as well as amongst those whose duty it is to screen the lights on behalf of shipbuilders and others; to increase the efficiency of the lights, and, further, to reduce the angle of screening, and thereby to lessen the width of the field in which both lights are visible ahead of the vessel.

Moreover, throughout the 22 years I have had the honour and pleasure of serving the Board of Trade, I do not know of anything having been done by the Marine Department more calculated to reduce loss of life at sea, than the alterations which were made in the instructions regarding ships' side lights, at the time the angle of screening was fixed; I do not, however, wish it to be inferred from this that I consider the present instructions and mode of dealing with ships' lights perfect; on the contrary, I think much remains to be done, but a great improvement has undoubtedly been effected, and I know that this opinion is shared by a great many of those of the Board's staff who have had to deal with lights under the new and old instructions.

I am, Sir,
Your obedient Servant,
Peter Samson.

Sir Digby Murray, Bart.,
Marine Department, Board of Trade.

# APPENDIX No. 3.



*Papers handed in by Mr. Samson.*

No. 1.—Tables showing (1) the Distance from the Lights to Points on the Middle Line produced, at which the Rays issuing from the outer edges of the wicks cross, and (2) the Half Breadth and Breadth of the Field of Mingled Rays at certain distances from the Lights.

Outer edges of the wicks screened to 1°. Length of screen 36".

| Distance between the outside edges of the Wicks of the Lights. | Distance from the Lights to the Crossing Point. | Distance from the Lights. ¼ Mile. Half Breadth of Field. | ¼ Mile. Breadth of Field. | ½ Mile. Half Breadth of Field. | ½ Mile. Breadth of Field. | ¾ Mile. Half Breadth of Field. | ¾ Mile. Breadth of Field. | 1 Mile. Half Breadth of Field. | 1 Mile. Breadth of Field. | 1¼ Miles. Half Breadth of Field. | 1¼ Miles. Breadth of Field. | 1½ Miles. Half Breadth of Field. | 1½ Miles. Breadth of Field. | 1¾ Miles. Half Breadth of Field. | 1¾ Miles. Breadth of Field. | 2 Miles. Half Breadth of Field. | 2 Miles. Breadth of Field. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. |
| 20 | 573 | 1·5 | 3 | 16 | 32 | 48 | 85 | 69 | 137 | 95 | 189 | 121 | 242 | 147 | 294 | 173 | 346 | 200 | 399 |
| 30 | 860 | − 3·5 | − 7 | 11 | 22 | 38 | 75 | 61 | 127 | 90 | 179 | 116 | 232 | 142 | 284 | 168 | 336 | 195 | 389 |
| 40 | 1,146 | − 8·5 | −17 | 6 | 12 | 33 | 65 | 59 | 117 | 85 | 169 | 111 | 222 | 137 | 274 | 163 | 326 | 190 | 379 |
| 50 | 1,433 | −13·5 | −27 | 1 | 2 | 28 | 55 | 54 | 107 | 80 | 159 | 106 | 212 | 132 | 264 | 158 | 316 | 185 | 369 |
| 60 | 1,719 | −18·5 | −37 | − 5 | −10 | 23 | 45 | 49 | 97 | 75 | 149 | 101 | 202 | 127 | 254 | 153 | 306 | 180 | 359 |
| 70 | 2,006 | −23·5 | −47 | −10 | −20 | 18 | 35 | 44 | 87 | 70 | 139 | 96 | 192 | 122 | 246 | 148 | 296 | 175 | 349 |

Lights screened to 2°.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 286 | 16 | 32 | 43 | 85 | 95 | 190 | 147 | 294 | 205 | 399 | 252 | 504 | 305 | 609 | 357 | 713 | 409 | 818 |
| 30 | 430 | 11 | 22 | 38 | 75 | 90 | 180 | 142 | 284 | 195 | 389 | 247 | 494 | 300 | 599 | 352 | 703 | 404 | 808 |
| 40 | 573 | 6 | 12 | 33 | 65 | 85 | 170 | 137 | 274 | 190 | 379 | 242 | 484 | 295 | 589 | 347 | 693 | 399 | 798 |
| 50 | 716 | 1 | 2 | 28 | 55 | 80 | 160 | 132 | 264 | 185 | 369 | 237 | 474 | 290 | 579 | 342 | 683 | 394 | 788 |
| 60 | 859 | − 4 | − 8 | 23 | 45 | 75 | 150 | 127 | 254 | 180 | 359 | 232 | 464 | 285 | 569 | 337 | 673 | | 778 |
| 70 | 1,002 | − 9 | −18 | 18 | 35 | 70 | 140 | 122 | 244 | 175 | 349 | 227 | 454 | 280 | 559 | 332 | 663 | 384 | 768 |

Lights screened to 3°.

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 191 | 30 | 59 | 69 | 137 | 147 | 294 | 226 | 452 | 305 | 609 | 383 | 766 | 462 | 923 | 541 | 1,081 | 619 | 1,238 |
| 30 | 286 | 25 | 49 | 64 | 127 | 142 | 284 | 221 | 442 | 300 | 599 | 378 | 756 | 457 | 913 | 536 | 1,071 | 614 | 1,228 |
| 40 | 382 | 20 | 39 | 59 | 117 | 137 | 274 | 216 | 432 | 295 | 589 | 373 | 746 | 452 | 903 | 531 | 1,061 | 609 | 1,218 |
| 50 | 477 | 15 | 29 | 54 | 107 | 132 | 264 | 211 | 422 | 290 | 579 | 368 | 736 | 447 | 893 | 526 | 1,051 | 604 | 1,208 |
| 60 | 572 | 10 | 19 | 49 | 97 | 127 | 254 | 206 | 412 | 285 | 569 | 363 | 726 | 442 | 883 | 521 | 1,041 | 599 | 1,198 |
| 70 | 668 | 5 | 9 | 44 | 87 | 122 | 244 | 201 | 402 | 280 | 559 | 358 | 716 | 437 | 873 | 516 | 1,031 | 594 | 1,188 |

Lights screened to Four Degrees.

| Distance between the outside edges of the Wicks of the Lights. | Distance from the Lights to the Crossing Point. | Distance from the Lights to the Points in the Field where the Breadth is measured. ¼ Mile. Half Breadth of Field. | ¼ Mile. Breadth of Field. | ½ Mile. Half Breadth of Field. | ½ Mile. Breadth of Field. | ¾ Mile. Half Breadth of Field. | ¾ Mile. Breadth of Field. | 1 Mile. Half Breadth of Field. | 1 Mile. Breadth of Field. | 1¼ Miles. Half Breadth of Field. | 1¼ Miles. Breadth of Field. | 1½ Miles. Half Breadth of Field. | 1½ Miles. Breadth of Field. | 1¾ Miles. Half Breadth of Field. | 1¾ Miles. Breadth of Field. | 2 Miles. Half Breadth of Field. | 2 Miles. Breadth of Field. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. | Ft. |
| 20 | 144 | 42 | 84 | 95 | 190 | 249 | 498 | 403 | 806 | 557 | 1,114 | 711 | 1,422 | 865 | 1,730 | 1,019 | 2,038 |
| 30 | 215 | 37 | 74 | 90 | 180 | 245 | 490 | 398 | 796 | 552 | 1,104 | 706 | 1,412 | 860 | 1,720 | 1,014 | 2,028 |
| 40 | 286 | 32 | 64 | 85 | 170 | 240 | 480 | 393 | 786 | 547 | 1,094 | 701 | 1,402 | 855 | 1,710 | 1,009 | 2,018 |
| 50 | 358 | 27 | 54 | 80 | 160 | 235 | 470 | 388 | 776 | 542 | 1,084 | 696 | 1,392 | 850 | 1,700 | 1,004 | 2,008 |
| 60 | 429 | 22 | 44 | 75 | 150 | 230 | 460 | 383 | 766 | 537 | 1,074 | 691 | 1,382 | 845 | 1,690 | 999 | 1,998 |
| 70 | 501 | 17 | 34 | 70 | 140 | 225 | 450 | 378 | 756 | 532 | 1,064 | 686 | 1,372 | 840 | 1,680 | 994 | 1,988 |

Note.—The numbers given in this Table are the nearest whole numbers. The minus sign before a number signifies that the most convergent rays do not cross the middle line. The figures given in the two columns (except the first) are not two actual distances but those found on the two most convergent rays as two long lines, each cutting the *outer* edges of the screens and wicks of the respective lights. For [illegible] of scales, *see* Appendix.

App. 3, No. 2.

No. 2.—Tables showing (1) the Distance from the Lights to the Points ahead of the Vessel where the most Convergent Rays, issuing from the Inner Edges of the Wicks, cross; and (2) the Distance from these Rays to the Middle Line of the Vessel extended forward (vessel's path).

Outer Edge of Wick Screened to 1°.

| Width or Equivalent Width of Wick. | Distance between the Outer Edges of the Wicks of the Lights. | Distance from the Lights to the point where the most Convergent Rays, issuing from the Inner Edges of the Wicks, Cross. | Distance from the Lights to the Points in the Middle Line referred to above. | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ¼ Mile. | ½ Mile. | ¾ Mile. | 1 Mile. | 2 Miles. | |
| | | | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. |
| ¾″ | 20 | No crossing point. | −13 | −15 | − 20 | − 26 | − 31 | − 52 |
| | 30 | | −18 | −20 | − 25 | − 31 | − 36 | − 57 |
| | 40 | | −23 | −25 | − 30 | − 36 | − 41 | − 62 |
| | 50 | | −28 | −30 | − 35 | − 41 | − 46 | − 67 |
| | 60 | | −33 | −40 | − 40 | − 46 | − 51 | − 72 |
| | 70 | | −38 | −50 | − 45 | − 51 | − 56 | − 77 |
| 1″ | 20 | No crossing point. | −18 | −27 | − 41 | − 57 | − 73 | −135 |
| | 30 | | −23 | −32 | − 46 | − 62 | − 78 | −140 |
| | 40 | | −28 | −37 | − 51 | − 67 | − 83 | −145 |
| | 50 | | −33 | −42 | − 56 | − 72 | − 88 | −150 |
| | 60 | | −38 | −47 | − 61 | − 77 | − 93 | −155 |
| | 70 | | −43 | −52 | − 66 | − 82 | − 98 | −160 |
| 1¼″ | 20 | No crossing point. | −23 | −36 | − 61 | − 87 | −112 | −218 |
| | 30 | | −28 | −41 | − 66 | − 92 | −117 | −223 |
| | 40 | | −33 | −46 | − 71 | − 97 | −122 | −228 |
| | 50 | | −38 | −51 | − 76 | −102 | −127 | −233 |
| | 60 | | −43 | −56 | − 81 | −107 | −132 | −238 |
| | 70 | | −48 | −61 | − 86 | −112 | −137 | −242 |
| 1¾″ | 20 | No crossing point. | −32 | −57 | −104 | −151 | −198 | −385 |
| | 30 | | −37 | −62 | −109 | −156 | −203 | −390 |
| | 40 | | −42 | −67 | −114 | −161 | −208 | −395 |
| | 50 | | −47 | −72 | −119 | −166 | −213 | −400 |
| | 60 | | −52 | −77 | −124 | −171 | −218 | −405 |
| | 70 | | −57 | −82 | −129 | −176 | −223 | −410 |

Outer Edge of Wick Screened to 2°.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ¾″ | Feet. 20 | Feet. 708 | Feet. 0 | Feet. 11 | Feet. 32 | Feet. 52 | Feet. 73 | Feet. 157 |
| | 30 | 1,068 | − 5 | 6 | 27 | 47 | 68 | 152 |
| | 40 | 1,428 | −10 | 1 | 22 | 42 | 63 | 147 |
| | 50 | 1,788 | −15 | − 4 | 17 | 37 | 58 | 142 |
| | 60 | 2,148 | −20 | − 9 | 12 | 32 | 53 | 137 |
| | 70 | 2,508 | −25 | −14 | 7 | 27 | 48 | 132 |
| 1″ | 20 | 1,413 | − 5 | 0 | 11 | 21 | 32 | 73 |
| | 30 | 2,133 | −10 | − 5 | 6 | 16 | 27 | 68 |
| | 40 | 2,853 | −15 | −10 | 1 | 11 | 22 | 63 |
| | 50 | 3,573 | −20 | −15 | − 4 | 6 | 17 | 58 |
| | 60 | 4,293 | −25 | −20 | − 9 | 1 | 12 | 53 |
| | 70 | 5,013 | −30 | −25 | −14 | − 4 | 7 | 48 |
| 1¼″ | 20 | No crossing point. | −10 | −10 | −10 | −10 | − 10 | −10 |
| | 30 | | −15 | −15 | −15 | −15 | − 15 | −15 |
| | 40 | | −20 | −20 | −20 | −20 | − 20 | −20 |
| | 50 | | −25 | −25 | −25 | −25 | − 25 | −25 |
| | 60 | | −30 | −30 | −30 | −30 | − 30 | −30 |
| | 70 | | −35 | −35 | −35 | −35 | − 35 | −35 |
| 1¾″ | 20 | No crossing point. | −20 | −31 | −52 | −72 | − 93 | −177 |
| | 30 | | −25 | −36 | −57 | −77 | − 98 | −182 |
| | 40 | | −30 | −41 | −62 | −82 | −103 | −187 |
| | 50 | | −35 | −46 | −67 | −87 | −108 | −192 |
| | 60 | | −40 | −51 | −72 | −92 | −113 | −197 |
| | 70 | | −45 | −56 | −77 | −97 | −118 | −202 |

The minus sign before a number signifies that the rays issuing from the inner edges of the wicks do not cross the middle line of the vessel extended forward (vessel's path).

## No. 2.—*continued.*



TABLES showing (1) the DISTANCE from the LIGHTS to the POINTS AHEAD of the VESSEL where the most CONVERGENT RAYS, issuing from the INNER EDGES of the WICKS, CROSS; and (2) the DISTANCE from those RAYS to the MIDDLE LINE of the VESSEL extended forward (vessel's path).

### OUTER EDGE OF WICK SCREENED TO 3°.

| Width or Equivalent Width of Wick. | Distance between the Outer Edges of the Wicks of the Lights. | Distance from the Lights to the point where the most Convergent Rays, issuing from the Inner Edges of the Wicks, Cross. | Distance from the Lights to the Points in the Middle Line referred to above. | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | ¼ Mile. | ½ Mile. | ¾ Mile. | ¾ Mile. | 1 Mile. | 2 Miles. |
| | | | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. | Distance from the most Convergent Inner Rays to the Vessel's Path. |
| ¾″ | 20 | 312 | 13 | 37 | 84 | 131 | 178 | 365 |
| | 30 | 470 | 8 | 32 | 79 | 126 | 173 | 360 |
| | 40 | 627 | 3 | 27 | 74 | 121 | 168 | 355 |
| | 50 | 785 | − 2 | 22 | 69 | 116 | 163 | 350 |
| | 60 | 943 | − 7 | 17 | 64 | 111 | 158 | 345 |
| | 70 | 1,101 | −12 | 12 | 59 | 106 | 153 | 340 |
| 1″ | 20 | 406 | 8 | 26 | 63 | 99 | 156 | 282 |
| | 30 | 612 | 3 | 21 | 58 | 94 | 131 | 277 |
| | 40 | 817 | − 2 | 16 | 53 | 89 | 126 | 272 |
| | 50 | 1,023 | − 7 | 11 | 48 | 84 | 121 | 267 |
| | 60 | 1,229 | −12 | 6 | 43 | 79 | 116 | 262 |
| | 70 | 1,434 | −17 | 1 | 38 | 74 | 111 | 257 |
| 1¼″ | 20 | 567 | 3 | 16 | 42 | 68 | 94 | 198 |
| | 30 | 855 | − 8 | 11 | 37 | 63 | 89 | 193 |
| | 40 | 1,143 | −13 | 6 | 32 | 58 | 84 | 188 |
| | 50 | 1,431 | −18 | 1 | 27 | 53 | 79 | 183 |
| | 60 | 1,719 | −23 | − 4 | 22 | 48 | 74 | 178 |
| | 70 | 2,007 | −28 | − 9 | 17 | 43 | 69 | 173 |
| 1¾″ | 20 | 2,823 | − 7 | − 5 | 0 | 6 | 11 | 32 |
| | 30 | 4,263 | −12 | −10 | − 5 | 1 | 6 | 27 |
| | 40 | 5,703 | −17 | −15 | −10 | − 4 | 1 | 22 |
| | 50 | 7,143 | −22 | −17 | −15 | − 9 | − 1 | 17 |
| | 60 | 8,583 | −27 | −22 | −20 | −14 | − 9 | 12 |
| | 70 | 10,023 | −32 | −27 | −25 | −19 | −14 | 7 |

### OUTER EDGE OF WICK SCREENED TO 4°.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. | Feet. |
| 1″ | 20 | 204 | 26 | 63 | 136 | 209 | 282 | 573 |
| | 30 | 307 | 21 | 58 | 131 | 204 | 277 | 568 |
| | 40 | 410 | 16 | 53 | 126 | 199 | 272 | 563 |
| | 50 | 512 | 11 | 48 | 121 | 194 | 267 | 558 |
| | 60 | 615 | 6 | 43 | 116 | 189 | 262 | 553 |
| | 70 | 718 | 1 | 38 | 111 | 184 | 257 | 548 |
| 1″ | 20 | 238 | 21 | 58 | 115 | 178 | 240 | 490 |
| | 30 | 358 | 16 | 48 | 110 | 173 | 235 | 485 |
| | 40 | 478 | 11 | 43 | 105 | 168 | 230 | 480 |
| | 50 | 598 | 6 | 38 | 100 | 163 | 225 | 475 |
| | 60 | 718 | 1 | 33 | 95 | 158 | 220 | 470 |
| | 70 | 838 | − 4 | 28 | 90 | 153 | 215 | 465 |
| 1¼″ | 20 | 285 | 16 | 42 | 94 | 146 | 198 | 387 |
| | 30 | 429 | 11 | 37 | 89 | 141 | 193 | 402 |
| | 40 | 573 | 6 | 32 | 84 | 136 | 188 | 397 |
| | 50 | 717 | 1 | 27 | 79 | 131 | 183 | 392 |
| | 60 | 861 | − 4 | 22 | 74 | 126 | 178 | 387 |
| | 70 | 1,005 | − 9 | 17 | 69 | 121 | 173 | 382 |
| 1½″ | 20 | 473 | 6 | 21 | 53 | 84 | 115 | 240 |
| | 30 | 713 | 1 | 16 | 48 | 79 | 110 | 235 |
| | 40 | 953 | − 4 | 11 | 43 | 74 | 105 | 230 |
| | 50 | 1,193 | − 9 | 6 | 38 | 69 | 100 | 225 |
| | 60 | 1,433 | −14 | 1 | 33 | 64 | 95 | 220 |
| | 70 | 1,673 | −19 | − 4 | 28 | 59 | 90 | 215 |

App. 3, No.

No 3.—Table showing (1) the Angle as found from experiment at which Side Lights show across the middle line produced, when observed at certain distances from the Lights; and (2) the Angle to which the outer edge of the Wicks of the Lights were then screened.

| Place where the Experiment was made. | Distinguishing mark on Lamp. | Description of Lens. | Red Light. Distance from Lamp to Observer. | Red Light. Angle corresponding to distances given in Major Elmslie's report, dated 17th October 1893, Appendix 2. No. 11. | Red Light. Angle of Screening. | Green Light. Distance from Lamp to Observer. | Green Light. Angle corresponding to distances given in Major Elmslie's report, dated 17th October 1893, Appendix 2. No. 11. | Green Light. Angle of Screening. |
|---|---|---|---|---|---|---|---|---|
| | | | Feet. | ° ′ | ° ′ | Feet. | ° ′ | ° ′ |
| Shoeburyness | Starnes (H) | Dioptric | 114 | 7 30 | 1 0 | 111 | 7 43 | 1 0 |
| ,, | ,, | ,, | 1,500 | 1 23 | 1 0 | 1,500 | 1 23 | 1 0 |
| ,, | ,, | ,, | 3,000 | 1 23 | 1 0 | 3,000 | 1 23 | 1 0 |
| ,, | ,, | ,, | 6,000 | 1 0 | 1 0 | 6,000 | 1 0 | 1 0 |
| ,, | ,, | ,, | 96 | 8 53 | 2 0 | 96 | 8 53 | 2 0 |
| ,, | ,, | ,, | 1,500 | 2 11 | 2 0 | 1,500 | 2 11 | 2 0 |
| ,, | ,, | ,, | 3,000 | 2 17 | 2 0 | 3,000 | 1 49 | 2 0 |
| ,, | ,, | ,, | 6,000 | 2 9 | 2 0 | 6,000 | 2 12 | 2 0 |
| ,, | ,, | ,, | 87 | 9 47 | 3 0 | 87 | 9 47 | 3 0 |
| ,, | ,, | ,, | 1,500 | 2 55 | 3 0 | 1,500 | 2 52 | 3 0 |
| ,, | ,, | ,, | 3,000 | 3 26 | 3 0 | 3,000 | 2 42 | 3 0 |
| ,, | ,, | ,, | 6,000 | 3 4 | 3 0 | 6,000 | 3 0 | 3 0 |
| ,, | ,, | ,, | 78 | 10 10 | 4 0 | 78 | 10 10 | 4 0 |
| ,, | ,, | ,, | 1,500 | 3 54 | 4 0 | 1,500 | 3 47 | 4 0 |
| ,, | ,, | ,, | 3,000 | 4 7 | 4 0 | 3,000 | 3 43 | 4 0 |
| ,, | ,, | ,, | 6,000 | 4 2 | 4 0 | 6,000 | 3 55 | 4 0 |
| ,, | Ridsdale | ,, | 12,000 | 1 52 | 2 0 | 12,000 | 1 56 | 2 0 |
| ,, | ,, | ,, | 12,000 | 2 39 | 3 0 | 12,000 | 2 56 | 3 0 |
| ,, | ,, | ,, | 12,000 | 3 35 | 4 0 | 12,000 | 4 4 | 4 0 |
| ,, | Admiralty | ,, | 12,000 | — | — | 12,000 | 3 55 | 4 0 |

## APPENDIX No. 4.

*Paper handed in by* ***Mr. Ramsay.***

App. 4, No. 1.

No. 1.—Particulars which have been noted by Surveyors in North-Eastern District *re* Screening of ships' side lights.

| Name | O.N. | Approximate Angle in Degrees of Screening before Alteration. | Surveyor's Name. |
|---|---|---|---|
| | | ° | |
| Gerona, S.S. | 93,475 | 4·0 | R. Marshall. |
| Orsino, S.S. | 82,797 | 2·55 | ,, |
| Dora, S.S. | 95,876 | 5·96 | ,, |
| Emily Waters, B.K. | 29,597 | 4·9 | ,, |
| Rowan, S.S. | 86,697 | 3·6 | ,, |
| Rockcliff, S.S. | 92,913 | 5·6 | ,, |
| Tarpeia, S.S. | 72,665 | 4·2 | ,, |
| Lowlands, S.S. | 92,925 | 4·0 | ,, |
| Kottingham, S.S. | 68,384 | 3·3 | ,, |
| Jane Kelsall, S.S. | 79,245 | 2·4 | ,, |
| Autocrat, S.S. | 70,239 | 4·1 | ,, |
| Bluebell, B.K. | 96,256 | 3·6 | ,, |
| Umzinto, S.S. | 91,980 | 6·5 | A. Jackson. |
| Northumbria, S.S. | 62,324 | 4·0 | ,, |
| Foscolino, S.S. | 84,997 | 6·0 | R. Marshall. |
| Regalia, S.S. | 67,309 | 1·25 | ,, |
| Trevethick, S.S. | 51,394 | 4·0 | ,, |
| Ben Corlie, S.S. | 89,840 | 4·25 | ,, |
| Surbiton, S.S. | 50,026 | 4·75 | ,, |
| T. E. Forster, S.S. | 51,386 | 3·0 | ,, |
| Routenburn | 81,812 | *10·0 | R. Marshall and A. J. |
| Watlington, S.S. | 86,940 | 5·0 | ,, |
| Newminster, S.S. | 80,567 | 2·25 | A. Jackson and R. M. |
| Rochdale, S.S. | 77,347 | 7·25 | ,, |
| United Service, S.S. | 52,836 | 7·0 | ,, |
| Metropolis | 93,736 | 5·25 | ,, |

| Name. | O.N. | Approximate Angle in Degrees of Screening before Alteration. | Surveyor's Name. |
|---|---|---|---|
| | | ° | |
| Lily | 20,531 | 2·5 | A. Jackson and R. M. |
| Miniera, S.S. | 86,263 | 3·0 | ,, |
| Dalton, S.S. | 76,215 | 4·0 | R. Marshall. |
| Marabont | 85,504 | 7·5 | A. J. Daniels. |
| Vanloo | 88,592 | 8·75 | ,, |
| Vanduara | 80,637 | 9·5 | ,, |
| Rothbury, S.S. | 65,808 | 6·25 | A. Jackson. |
| Santon, S.S. | 96,607 | 6·125 | ,, |
| Jaffar, S.S. | 68,812 | 4·0 | ,, |
| Sceptre, S.S. | 68,449 | 4·25 | ,, |
| Whinlatter | 93,739 | 2·625 | ,, |
| Blythwoode, S.S. | 63,620 | 2·25 | ,, |
| Ruby, S.S. | 84,364 | 1·75 | ,, |
| Fortescue, S.S. | 85,953 | 2·375 | ,, |
| Oakworth | 69,332 | 3·875 | ,, |
| Aberdeen, S.S. | 65,076 | 6·0 | ,, |
| Arthur, S.S. | — | 2·5 | S. Rudd. |
| Perseverance, S.S. | 81,493 | 3·5 | ,, |
| Hartside, S.S. | 86,110 | 1·5 | ,, |
| Balmuir, S.S. | 78,690 | 3·5 | ,, |
| Shearwater, S.S. | 95,245 | 3·5 | ,, |
| Racilia, S.S. | 76,220 | 0·5 | ,, |
| George Heaton, S.S. | 84,862 | 2·0 | ,, |
| Start, S.S. | 95,521 | 3·0 | ,, |
| Paola, S.S. | 92,909 | 4·0 | ,, |
| Alexandra | 53,244 | 3·0 | S. Shrigley. |
| Amy | 16,737 | 5·0 | ,, |

* This vessel's side lights had been damaged previous to being inspected; but by observation taken they appear to have been screened to converge at an angle of about 10°.

No. 1.—*continued.*

| Name. | O.N. | Approximate Angle in Degrees of Screening before Alteration. | Surveyor's Name. | Name. | O.N. | Approximate Angle in Degrees of Screening before Alteration. | Surveyor's Name. |
|---|---|---|---|---|---|---|---|
| | | ° | | | | ° | |
| Annandale, S.S. - | 79,635 | 3·0 | S. Shrigley. | Minnie Irvine, S.S. - | 67,531 | 5·0 | S. Shrigley. |
| Bessie Whineray - | 54,534 | 6·0 | ,, | Navarra, S.S. - | 86,675 | 3·0 | ,, |
| British Queen, S.S. - | 49,808 | 5·0 | ,, | Nellie Wise, S.S. - | 67,538 | 5·0 | ,, |
| Charity - - | 10,249 | 5·0 | ,, | Ocean - - | 8,532 | 6·0 | ,, |
| Contender - - | 13.337 | 3·0 | ,, | Useful - - - | 21,454 | 3·0 | ,, |
| Dalbeattie, S.S. - | 76,130 | 6·0 | ,, | Empress, S.S. - | 97,362 | 3·0 | R. Wotherspoon. |
| Eliza Jane - - | 67,226 | 6·0 | ,, | | | | |
| Enterprise - - | 52,632 | 6·0 | ,, | Fortunatus, S.S. - | 89,464 | 3·0 | ,, |
| George Fisher, S.S. - | 77,206 | 5·0 | ,, | Fountains Abbey, S.S. | 81,776 | 5·0 | ,, |
| George Reynolds - - | 1,936 | 5·0 | ,, | German Empire, S.S. - | 67,537 | 5·0 | ,, |
| Gipsy Queen, S.S. - | 12,889 | 5·0 | ,, | Great Northern, S.S. - | 63,584 | 5·0 | ,, |
| Lightning - - | 16,796 | 5·0 | ,, | Kaiser, S.S. - - | 81,513 | 4·0 | ,, |
| Matilda - - - | 58,737 | 6·0 | ,, | | | | |

Average of total number of ships = 4·4°. 61 per cent. of these vessels are screened to an average angle of 5·47°; 39 per cent. are screened to an average of about 2·7°.

No. 2.—List of Lamps measured in the North-East District of England.

| Maker of Lamp. | Dimensions. Breadth. | Dimensions. Height. | Distance from Inner Edge of Lamp to Outer Edge of Wick. | Distance from Inner Edge of Lamp to Inner Edge of Lens. | Difference between the Two Measurements. | Angle of Convergence with Screens 3′ 0″ in Length. | Remarks. |
|---|---|---|---|---|---|---|---|
| | Inches. | Inches. | Inches. | Inches. | Inches. | ° ′ | |
| Proud and Hogg - - | 9 × 9 | 12 | 5 | $1\frac{3}{4}$ | $3\frac{1}{4}$ | 5 9 | |
| ,, - - | 9 × 9 | 12 | $5\frac{1}{8}$ | 2 | $3\frac{1}{8}$ | 4 58 | |
| Elliot and Gladston - - | $9\frac{1}{8}$ × $9\frac{1}{8}$ | 11 | $4\frac{1}{3}$ | $1\frac{7}{8}$ | $2\frac{5}{8}$ | 4 10 | |
| Thomas Proctor and Sons - | $9\frac{1}{4}$ × $9\frac{1}{4}$ | $11\frac{3}{8}$ | $4\frac{13}{16}$ | $2\frac{1}{4}$ | $2\frac{9}{16}$ | 4 4 | |
| ,, - | $9\frac{1}{4}$ × $9\frac{1}{4}$ | $11\frac{1}{2}$ | $4\frac{7}{8}$ | $1\frac{7}{8}$ | $2\frac{7}{8}$ | 4 34 | |
| ,, - | $9\frac{1}{4}$ × $9\frac{1}{4}$ | $11\frac{1}{4}$ | $4\frac{13}{16}$ | $1\frac{13}{16}$ | 3 | 4 46 | |
| ,, - | $9\frac{3}{8}$ × $9\frac{3}{8}$ | $11\frac{3}{8}$ | $4\frac{7}{8}$ | $1\frac{7}{8}$ | 3 | 4 46 | |
| ,, - | $9\frac{1}{4}$ × $9\frac{1}{2}$ | $11\frac{5}{8}$ | $4\frac{7}{8}$ | 2 | $2\frac{7}{8}$ | 4 34 | |
| I. France & Co. - - | 9 × 9 | $11\frac{5}{8}$ | $4\frac{3}{8}$ | $1\frac{7}{8}$ | $2\frac{3}{4}$ | 4 22 | |
| ,, - - | 9 × 9 | 11 | $4\frac{1}{2}$ | 2 | $2\frac{1}{2}$ | 4 10 | |
| ,, - - | 9 × 9 | $11\frac{3}{8}$ | $4\frac{3}{4}$ | 2 | $2\frac{3}{4}$ | 4 22 | |
| ,, - - | 9 × 9 | $11\frac{1}{4}$ | $4\frac{3}{4}$ | $1\frac{15}{16}$ | $2\frac{13}{16}$ | 4 28 | |
| J. L. Hall and Sons - - | $9\frac{1}{2}$ × $9\frac{1}{2}$ | 11 | $5\frac{1}{8}$ | $2\frac{1}{4}$ | $2\frac{7}{8}$ | 4 34 | |
| ,, - - | 9 × 9 | 11 | $4\frac{3}{8}$ | $1\frac{7}{8}$ | $2\frac{5}{8}$ | 3 58 | |
| Grieve and Gillespie - - | 9 × 9 | 11 | $4\frac{5}{8}$ | $1\frac{7}{8}$ | $2\frac{7}{8}$ | 4 34 | |
| Twizell and Sons - - | 9 × 9 | $10\frac{1}{2}$ | $4\frac{3}{4}$ | $1\frac{1}{2}$ | $3\frac{1}{4}$ | 5 9 | |
| | | | | | Mean - | 4 32 | |

In these examples the wicks were one inch wide.

No. 3.—Table showing transverse distance between Outer Edge of Wick and Forward Edge of Lens when the Wick is at the Centre of Curvature and the Lens inclined 45° to the Fore and Aft middle line of vessel in accordance with the ordinary practice.

No. of Degrees in Arc 130.

| Curside Radius of Lens in Inches. | Angle of Inclination of Lens in Degrees. | Angle of Wick in Degrees. | Width of Wick in Inches. | Transverse Distance between Outer Edge of Wick and Forward Edge of Lens in Inches. | Mean Distance for each size of Lens in Inches. |
|---|---|---|---|---|---|
| 5 | 45 | 45 | $1\frac{1}{4}$ | 2·3235 | 2·298 |
| 5 | 45 | 45 | 1 | 2·0600 | ·375 |
| 5 | 45 | 90 | $1\frac{1}{4}$ | 2·5890 | |
| 5 | 45 | 90 | 1 | 2·2100 | 2·673 |
| $5\frac{1}{2}$ | 45 | 45 | $1\frac{1}{4}$ | 2·5362 | 2·508 |
| $5\frac{1}{2}$ | 45 | 45 | 1 | 2·2737 | ·375 |
| $5\frac{1}{2}$ | 45 | 90 | $1\frac{1}{4}$ | 2·7987 | |
| $5\frac{1}{2}$ | 45 | 90 | 1 | 2·4237 | 2·883 |
| $6\frac{1}{2}$ | 45 | 45 | $1\frac{1}{4}$ | 2·8782 | 2·850 |
| $6\frac{1}{2}$ | 45 | 45 | 1 | 2·6157 | ·375 |
| $6\frac{1}{2}$ | 45 | 90 | $1\frac{1}{4}$ | 3·1407 | |
| $6\frac{1}{2}$ | 45 | 90 | 1 | 2·7654 | 3·225 |
| | | | | 30·6148 | |
| | | | | 2·5512 | |

# APPENDIX No. 5.

*Papers handed in by the Chairman.*

App. 5, No. 1.

## No. 1.—Letter from the Principal Officer of the Board of Trade at Cardiff as to the Angle of Screening on Foreign Ships.

*Screening of Side Lights of Foreign Vessels.*

Board of Trade, Surveyor's Office,
Cardiff, 16th May 1895.

Dear Mr. Hipwood,

In response to your note of the 7th inst. on this subject, I now beg to forward you a list of foreign vessels I have had visited in this district between the 8th and 15th of May. The vessels were visited as they came in the way of the surveyors' several rounds, and they are the results of the inspection of seven different surveyors. The summary comes out thus:—

*Total Vessels.*

The total number of vessels visited was 50, of which 38 are fitted with side light screens arranged to project the light ahead at an angle of 4° and over, while 10 are screened to a finer angle than 4°, and two to an angle of 5½° outward.

*Steamers.*

Of the 50 vessels, 17 are steamers, divided as follows:—2 Swedish, 1 Norwegian, 6 French, 4 German 1 Belgian, 2 Austrian, and 1 Greek. 12 of these are screened to 4° and over, while 4 are at 3°, and 1 at less, viz., 1° 28′.

*Sailing Vessels.*

Of the 33 sailing vessels, 2 are Swedish, 14 Norwegian, 1 Spanish, 10 French, 2 Germans, 1 Dutch, 1 American, 1 Danish, and 1 Italian.

Of these 26 are screened to 4° and over, 2 to 3°, 1 to 2°, and 2 to under 2°, while 2 are screened to an angle of 5½° outwards.

This is a fair sample of what we are meeting in every-day practice.

Yours faithfully,
Alfred J. G. Chalmers.

C. Hipwood, Esq.,
Secretary,
Side Light Screening Committee,
Marine Department.

Foreign Vessels inspected in South Wales District for Screening of Side Lights between 8th and 15th May 1895.

| Name of Vessel (Steam or Sailing). | Nationality. | Details of Screening. | Angle. |
|---|---|---|---|
| Henriette (sailing) | Norwegian | Carried on stanchions abaft fore-rigging in fine, and on aft end of poop rail in foul, weather. | 7° 17′ and 7° 36′ port, 6° 48′ and 7° 8′ starboard (two sets of lanthorns). |
| Drott (steam) | Swedish | Carried on cranked stanchions above pilot bridge rail amidships. | 3° 13′ port, 4° 15′ starboard. |
| Minna (steam) | German | Carried on outer ends of pilot bridge platform amidships. Certificates of inspection dated December 1891 on board (German). | 4° 10′ port, 4° 10′ starboard. |
| Amiral Cecille (steam) | French | Carried on crank stanchions above pilot bridge amidships. | 2° 45′ port, 3° 23′ starboard. |
| Herman (sailing) | Norwegian | On davits, fore-rigging, port inclined inwards 2″ in 3′, starboard inclined outwards 3″ in 3′. | 5° port inward, 3° starboard outward. |
| Skiblander (sailing) | Norwegian | Abaft fore-rigging on straight stanchions, each screen inclined inwards 2″ in 3′. | 9° inwards. |
| Princesa Dagmar (sailing) | Spanish | Mizen rigging on straight stanchion, each screen inclined outwards 5½″ in 4′. | 5½° outwards. |
| Rosa (sailing) | French | Fitted on the quarters on single davits | 5½° outwards. |
| Arestos (sailing) | Norwegian | Fore side. Fore-rigging on straight stanchions. | 8° inwards. |
| Statsminster Stang (sailing) | Norwegian | Fore side. Fore-rigging on straight stanchions. | 8° inwards. |
| Union (sailing) | French | On each quarter on single davit | 6° inwards. |
| Gyda (steam) | Norwegian | Screens 3′ 9″ | 3¾° port, 3¾° starboard. |
| Stella (steam) | Swedish | Screens 3′ 6″ | 4½° port, 4¾° starboard. |
| Atlantic (sailing) | German | Screens 3′ 9″ | 4° full port, 4° bare starboard. |
| Otto (sailing) | German | Screens 4′ 0″ | 5¾° port, 5° starboard. |
| Gaudal (sailing) | Norwegian | Screens 3′ 8″ | 5½° port, 4½° starboard. |
| Louise Eugene (sailing) | French | Screens 2′ 1″ | 1° stanchion port bent, 9° starboard. |
| Anna (sailing) | French | Main rigging on stanchions | 11° inwards. |
| Leonidas (sailing) | French | Main rigging on stanchions | 9° inwards. |
| G. G. M. (sailing) | French | Carried right aft, on single davits | 9° inwards. |
| Urie (sailing) | French | Carried right aft, on single davits | 6° inwards. |
| Hoogeland (sailing) | Dutch | Carried in main rigging, seized to shrouds | 11° inwards. |
| Ellen (sailing) | Swedish | Carried right aft, on davits | 3° inwards. |
| Erbrin (sailing) | Norwegian | Fore side of fore-rigging | 5° inwards. |

App. 5, Nos. 1 and 2.

| Name of Vessel (Steam or Sailing). | Nationality. | Details of Screening. | Angle. |
|---|---|---|---|
| Benjn. F. Packard (sailing) | United States | Screens parallel to keel, cleat 41 inches before the wick. Lamps carried in towers at after part of forecastle. | 4° 32′ inwards. |
| Marie Celine (sailing) | French | Screens attached to the main rigging. Screens not parallel, and only 33″ before wick. No cleats. | 6° 6′ inwards. |
| Leonie Anastaise (sailing) | French | Screens are on bowed-out stanchions, secured with an iron stay abreast the main rigging. They are parallel. Screens 39 inches before wick. | Starboard 4° 25′, Port 5° 9′. |
| Estelle Leon (sailing | French | Screens are lashed to the fore-rigging, not parallel; they are 4½ inches more apart at the after end than the fore end; no cleats. Screens 50 inches before wick. | 8° 38′. |
| Albis (steam) | German | Screens not parallel; 3½ inches broader apart at fore end than after end. Cleats 3 inches on at 39 inches before wick. | 1° 28′. |
| Esmeralda (sailing) | Norwegian | Screens on stanchions abreast the fore-rigging. Parallel to keel no cleats, Screens 44 inches before wick. | 5° 52′. |
| Daggrif (sailing) | Norwegian | Screens on stanchions abreast the main-rigging not parallel to keel. 3½ inches broader at fore end than the after end. Cleats 2½ inches on at 35 inches before wick. | 1° 14′. |
| Emma (sailing) | Norwegian | Screens on a single bowed-out stanchion just before the mizen-rigging secured in place with rope lashings, not parallel. Screen 36 inches before wick. | Nearly 2°. |
| Dagmar (sailing) | Danish | Screens carried on stanchions right-aft on the quarters, not parallel. Screens 61 inches before wick. | 0° 56′. |
| Primus (sailing) | Swedish | Screens carried on bowed-out stanchions abreast main-rigging, not parallel. No cleat on starboard screen; starboard screen 42 inches, port 39 inches; screens secured in place with rope lashing to rigging. | Starboard 4° 47′, Port 0° 44′. |
| Besratael (steam) | Belgian | Screens placed on bridge deck on swing-out stanchions. | 4°. |
| Colonist (sailing) | Norwegian | Screens outside fore-rigging on stanchions | 2½°. |
| La Rochelle (steam) | French | Screens placed on upper bridge on swing-out stanchions. | 4°. |
| Commentry (steam) | French | Screens placed on upper bridge on swing-out stanchions. | 4°. |
| Valin (steam) | French | Screens on upper bridge on swing-out stanchions. | 3°. |
| Neapel (steam) | German | Screens chocked to 4° angle but being not fore-and-aft, but pointing out the actual screening is. | Port 3°, Starboard 2°. |
| Listo (sailing) | Norwegian | Carried foreside of fore-rigging | 6°. |
| Eliser (sailing) | Norwegian | Carried foreside of fore-rigging | 4°. |
| Venezulla (sailing) | Norwegian | Carried foreside of fore-rigging | 6°. |
| Boucau (steam) | French | Screens on upper bridge on swing-out stanchions. | 4°. |
| F. Bischoff (steam) | German | - | 4°. |
| Burma (steam) | Austro-Hungarian | - | 3°. |
| Francisco Gotuzzo (sailing) | Italian | Screens if fore-and-aft would be to 4° angle, but both point inboard. | 6°. |
| Bearn (steam) | French | Screens on upper bridge on swing-out stanchions. | 4°. |
| Ulysses (steam) | Greek | Screens on upper bridge on swing-out stanchions. | 4°. |
| Szant Laszlo (steam) | Austro-Hungarian | Screens on upper bridge on swing-out stanchions. | 5°. |

May 16, 1895.

ALFRED J. G. CHALMERS.
Principal Officer, South Wales District.

No. 2.—LETTER from the PRINCIPAL OFFICER of the BOARD of TRADE at NORTH SHIELDS as to the ANGLE of SCREENING on FOREIGN SHIPS.

*Screening of Side Lights of Foreign Vessels.*

Board of Trade Surveyor's Office,
North Shields,
14th May 1895.

SIR,

As requested by Mr. Hipwood I send some particulars of the screening of the side lights of 20 foreign vessels examined on the Tyne between the 8th and 13th instant.

It will be seen that the average angle of convergence is greater than that required by the Board's regulations for British ships.

If you approve please hand the lists to Mr. Hipwood for the information of the Committee

I am, &c.,
JAMES RAMSAY.

Sir Digby Murray, Bart.,
Board of Trade.

Further particulars can be obtained if necessary.

App. 5, Nos. 2 and 3.

*Screening of the Side Lights of some Foreign Vessels, examined on the Tyne between the 8th and 13th May* 1895.

Board of Trade Surveyor's Office,
North Shields.

Sir, 14th May 1895.

In accordance with your instructions I have examined the side lights of some 20 foreign vessels on this river. The vessels were not selected in any way, but were taken haphazard. The results are given on the two sheets attached

The average angle of screening, as found by drawing a line from the outer edge of the wick to the end of the screen or chock, and intersecting a fore and aft line through the latter point, is, in the case of eight sailing vessels, omitting the one where the wicks were obscured right ahead, a little over 6°; and in the case of the 11 steamers is a little over 5°.

I am, &c.,
Arthur Jackson,
Surveyor.

The Principal Officer,
N. Shields.

Screening of the Side Lights of some Foreign Steamers examined on the Tyne between the 8th and 13th May 1895.

| Name of Vessel. | Nationality. | Port. | Net Register Tons. | Angle to which Side Lights are screened with fore and aft line as formed by drawing a line from outboard edge of wick to end of screen or chock, as case may be. | | |
|---|---|---|---|---|---|---|
| | | | | Port. | Starboard. | Mean. |
| Sterling, S.S. | Norwegian | Christiania | 648 | 5¾° | 4⅛° | 5° |
| Riga, S.S. | German | Rostock | 452 | 6¾° | 6¼° | 6½° |
| Agosto, S.S. | Spanish | Bilbao | 1,136 | 5¼° | 3¾° | 4½° |
| Jokai, S.S. | Austrian | Fiume | 780 | 5¼° | 3¾° | 4½° |
| Hekla, S.S. | Norwegian | Bergen | — | 4⅛° | 5¼° | 4¾° |
| Rupanco, S.S. | Chilian | Valdivia | New | 7° | 6¼° | 6¾° |
| Zoppot, S.S. | German | Dantzic | 284 | 6° | 6¼° | 6¼° |
| Mimer, S.S. | Swedish | Gothenburg | 350 | 4° | 4° | 4° |
| Brutus, S.S. | German | Kiel | 466 | 6¼° | 3¼° | 4¾° |
| Komet, S.S. | Swedish | Gothenburg | — | 3⅛° | 2¾° | 3° |
| Gran Antilla, S.S. | Spanish | Barcelona | 2,294 | 6¼° | 5¾° | 6° |
| | | | | Average | | 5·11° |

14th May 1895. Arthur Jackson.

Screening of the Side Lights of some Foreign Sailing Vessels examined on the Tyne between the 8th and 13th May 1895.

| Name of Vessel, &c. | Nationality. | Port. | Net Register Tons. | Angle to which Side Lights are screened with fore and aft line as formed by drawing a line from outboard edge of wick to end of screen or chock, as case may be. | | |
|---|---|---|---|---|---|---|
| | | | | Port. | Starboard. | Mean. |
| Rialto, Iron Bk. | German | Elsfleth | 1,182 | 3⅛° | 5¼° | 4 1/16° |
| Emilie, Iron Ship | „ | Bremen | 1,794 | 9½° | 5⅜° | 7⅜° |
| Britannia, Iron Bk. | „ | „ | 841 | 8⅜° | 6½° | 7⅜° |
| Mathilde Deussen, Iron Bk. | „ | Hamburg | 950 | 9° | 10° | 9½° |
| Australia, Iron Bk. | Norwegian | Bergen | 1,170 | 2¾° | 2¾° | 2¾° |
| Frederick VI. Minde, Wood Sch. | Danish | Aalborg | 112 | 7½° | 9½° | 8½° |
| Henrik Wergeland, Wood Brig. | Norwegian | Christiania | 196 | More than half of wick obscured right ahead. | Wick entirely obscured right ahead. | — |
| Erato, Wood Bk. | „ | Arendal | — | 3¾° | 3¾° | 3¾° |
| Selma, Wood 3-mast Sch. | Swedish | Stromstad | — | 4⅛° | 4⅛° | 4⅛° |
| | | | | Average | | 6° |

14th May 1895. Arthur Jackson.

No. 3.—Official Report of the Inquiry into the Collision between the "Brinkburn" and the "Alvah."

*See* Question 1189.

(No. 5142.)

"BRINKBURN" (S.S.)

AND

"ALVAH" (S.S.)

10th April 1895.

George Jacob, master of the British S.S. "Brinkburn."

The Court, in the matter of a formal investigation held at Valletta, Malta, by me, the undersigned Magistrate of Judicial Police, on the nature and cause of the collision which took place in the Straits of Messina on the 29th March last, at about 8.30 p.m., between the British S.S. "Brinkburn" and the British S.S. "Alvah." I appointed as nautical assessors to assist me, the master mariners Salvatore Stivala and Rosario Frendo Azopardi, and on the 5th inst. I opened the investigation by taking, in the first place, the unsworn evidence of George Jacob, the master of the "Brinkburn," duly warned by me, and then those of Francis

Reval, an engineer and naval constructor, a passenger on board the "Brinkburn," as representing the French Government; of Antione Tracon, a first lieutenant in the French navy, another passenger; of Lewis William, the man at the wheel on the "Brinkburn" at the time of the collision; of Samuel Shelduck, chief engineer; of Joseph Dauphin, the man on the look-out; George Alcock, supernumerary second mate, and John Trickey, all belonging to the "Brinkburn."

From the evidence taken it appears that the "Brinkburn" is a British S.S., bearing the official number 102,849, built of steel one year ago in Stockton, registered in the port of London, of the registered tonnage 2,096, owned by Messrs. Harris and Dixon, of London. On the 5th March last the ship left Havre for Toulon, laden with French Government stores, and on the 27th March left Toulon with a fresh cargo of French Government stores, bound to Madagascar. On the 29th March last, at about 8 p.m., the ship doubled Cape Faro, in the Straits of Messina, at a distance of about half a mile from the land, the master being at the time on the bridge. The night was clear and the sea smooth, the "Brinkburn" then going at full speed. In steaming through the Straits the master perceived a steamer's bright and green lights on his starboard bow, and kept his course; but when drawing near the other steamer, the "Brinkburn" was caught by an eddy current and ran against her starboard helm until her head was brought almost at a line with the other ship. Immediately after the red light of the other steamer was visible, and the "Brinkburn" suddenly flew off to port. The master of the "Brinkburn" then blew two blasts of the whistle to indicate that his vessel was swinging to port, and reversed engines to full speed astern. No answer was given to his blasts, and he immediately blew out two other blasts, which were only answered by one the engines still going full speed astern. This notwithstanding, the collision became unavoidable, and the other steamer was struck on her port side almost amidships. The "Brinkburn" had part of her stem carried away, with several iron plates. The other steamer, which a few hours afterwards foundered on the Calabrian coast, proved to be the British S.S. "Alvah," of Aberdeen, coming from the Black Sea with a cargo of wheat for Antwerp.

Immediately after the collision the master of the "Brinkburn" ordered three boats to be lowered to give assistance to the "Alvah"; the crew of the last ship were found already in their boats, but being overcrowded, the boats of the "Brinkburn" picked up seven men in one of their boats and took them on their ship. The "Brinkburn" then entered the port of Messina and landed the men of the "Alvah."

In the opinion of the assessors, which I find no reason to disapprove, it appears that the "Alvah" ought to have kept the Calabrian coast of the Straits in going through it from its southern part, and as the weather was fine and the sea smooth, nothing could have excused her for keeping so close to the Sicilian coast.

The absence of any of the crew of the "Alvah" prevented me from hearing any evidence on that side, and consequently I had to satisfy myself of the evidence only of a part of the crew of the "Brinkburn."

Master Jacob, when being caught by the eddy current, in the opinion of the assessors, which I confirm, did all he could to avoid the collision, but on doubling the Faro Point he did not give a wider berth, which might probably have caused him to avoid the whirlpools which generally exist near Faro Point; the whirlpools being the motive that his ship did not answer her helm.

The Court therefore disapproves the course followed by Master George Jacob in passing through narrow waters, where whirlpools are known to be of frequent occurrence, in so close a proximity to the land as half a mile, the collision being due only to the strength of the eddy currents, and might have thus been avoided. I find, however, no reason to interfere with the master's certificate of competency, dated 27th August 1878, No. 21,328, which is consequently delivered back to him, and feel myself only bound to caution him for the future.

At the last stage of the inquiry, Notary George Alfred Page appeared on behalf of the "Alvah," empowered by telegram. App. 5, No. 3.

(Signed) P. Frendo Azopardi, Magistrate.

We concur.

(Signed) S. Stivala, R. Frendo Azopardi, } Assessors.

*Opinion of Assessors.*

We the undersigned master mariners, appointed nautical assessors for the purpose of assisting the magistrate, Mr. P. Frendo Azopardi, in the investigation as to the cause of collision between the British S.S. "Brinkburn" and the S.S. "Alvah," of Aberdeen, after careful examination of witnesses, report as follows:—

The British S.S. "Brinkburn" left Toulon on the 27th March 1895, laden with French Government stores for Madagascar, under the command of Captain G. Jacob.

On the evening of the 29th, at about 8 o'clock, she was rounding the Faro Point at a distance of about half a mile from land, Captain G. Jacob being at the time on the bridge. The night was clear and the sea smooth. The ship was then going at a full speed. On rounding the point a masthead light and a green light was sighted on the starboard bow. The "Brinkburn" proceeded on her way, but a few minutes afterwards she was caught by an eddy current. The helm at the time was hard-a-starboard, but the ship swung against her helm until her head was brought almost in a line with the other ship. Immediately after the red light of the other ship was seen, and the "Brinkburn" suddenly flew off to port. Captain Jacob, seeing the dangerous position of the ship, blew two blasts of the whistle to indicate that the vessel was swinging to port, and reversed engines to full speed astern; but as the other steamer did not give any answer to the whistle, he gave two more blasts, which were answered immediately by one. The engines were still going full speed astern, but this did not prevent the collision; and the other steamer, which was struck on her port side nearly amidships, and a few hours afterwards foundered on the Calabrian coast, proved to be the S.S. "Alvah," of Aberdeen, coming from the Black Sea laden with grain for Antwerp. The "Brinkburn," immediately after the collision, sent three boats in assistance of the other ship, and found the crew already in their own boats; but, being overcrowded, they removed seven individuals and took them on board, who subsequently were landed at Messina.

The "Brinkburn" had carried away part of the stem and several iron plates from the 20 ft. mark down to the fore foot of the ship, and came to Malta for repairs. The evidence heard in this inquiry was only limited to the crew and passengers of the "Brinkburn," as the crew of the "Alvah" were not available at Malta.

It appears that the "Alvah," ought to have kept the Calabrian side of the Straits in going through it from its southern part, and nothing in the state of the weather justified her keeping so close to the Sicilian coast.

The master of the "Brinkburn," when caught by the eddy current, did all what a seaman could possibly do to avoid the collision; but we are of opinion in doubling the Faro Point he did not give it a wider berth. By so doing he could have probably avoided the whirlpools that generally exist near Faro Point, which prevented his ship from answering her helm.

(Signed) S. Stivala, R. Frendo Azopardi, } Master Mariners.

Valletta, Malta, 10th April 1895.

Confirmed on oath by the assessors, 10th April 1895.

(Signed) F. S. Rossignaud, Clerk.

P. Frendo Azopardi, Magistrate.

Issued in London by the Board of Trade on the 13th day of May 1895.

# APPENDIX No. 6.

*Papers handed in by Mr. Anderson.*

App. 6, No. 1. No. 1.—Paper on the Screening and Position of Ships' Side Lights, read before the Chamber of Shipping of the United Kingdom at the Annual Meeting, 1st February 1893, by J. G. S. Anderson, Esq.

## Ships' Side Lights.

New instructions by Board of Trade to their surveyors (1892).

Early last year a circular containing new instructions on the subject of side lights was issued by the Board of Trade to their surveyors.

Legality and expediency of instructions.

These instructions involve a change in the method of screening which I believe to be both inexpedient and illegal—inexpedient, because it will do much to impair the value of side lights as an indication of the course steered; illegal, because the change in the screening does not bear the sanction of a new Order in Council, and is in conflict with the conditions which the last Order* on the subject appears to lay down.

Conditions laid down by last Order in Council.

The conditions I specially refer to are three, viz.:—

(1.) That the side lights shall be so constructed as to show an uniform light over an arc of the horizon of 10 points.

(2.) That they shall be so fixed as to throw the light from right ahead to two points abaft the beam.

(3.) That they shall be so fitted with inboard screens as to prevent their being seen across the bow.

New departure in method of screening.

The new instructions prescribe that in future the lights shall be screened, so that their rays converge ahead of the stem, each light at an angle of 4° to a line parallel with the keel.

At variance with Act of Parliament.

If so screened, the lights will violate all three of the above-named conditions.

(1.) They will each show a light over an arc of the horizon not of 10 points, but of 10 points plus 4°.

(2.) They will not throw the light from right ahead to two points abaft the beam, but from a point on the opposite bow.

(3.) They will be seen across the bow.

Legal opinion as to its legality.

Quite apart from the merits of the change, I am advised that it is illegal, and that such a departure from the principle sanctioned by English and International Maritime Law will, in the event of collision, put out of court any ship which has adopted it, if any question of lights is involved in the merits of the collision.

Board of Trade view as to its legality.

I have, by the courtesy of Sir Digby Murray, had an opportunity of obtaining an explanation of the objects of the Board of Trade in making the change, and of their authority for doing so. That any extraordinary authority is required they deny; their view, as I understand it, being that there is practically no change involved; that the last Order in Council, if read broadly, is not in conflict with the new instructions; that the practice, in the great majority of cases, has been in the past to screen the lights at an angle of greater or less convergence (say on an average 4° each light); and that the purpose of the new instructions is merely to recognise the existing practice, and to bring about uniformity in the angle to which the side lights shall converge.

The words of the Order "right ahead" when read with the restriction of the arc to 10 points of the compass, measured from two points abaft the beam, cannot, I believe, bear any meaning other than that each light is to be visible right ahead at any point along an imaginary line drawn parallel with the keel in prolongation of the screen.

To the objection that any convergence whatsoever must therefore contravene the statutory rule, the Board of Trade reply that they construe the words "right ahead" as meaning right ahead of the ship, that is to say, that both lights must be visible along an imaginary line drawn in prolongation of the line of the ship's keel, and that this cannot be effected without angling the lights.

To the objection that the Order forbids the lights being screened across the bow, they reply that the words "seen across the bow" mean seen across the bows of the ship; consequently that provided the green and red rays do not cross abaft the stem of the ship, there is no limitation imposed on the angle of convergence.

The instructions inconsistent with Board of Trade interpretation of Order in Council.

If we accept these interpretations as correct, if the Order does indeed contemplate both lights being visible at any point along an imaginary continuation of the keel line, and permits of their being screened at the angle of convergence necessary to effect this, then the limitation of the angle of convergence to 4°, which would make the two side lights visible along this imaginary line only at distances varying with the width of the ship, is inconsistent with the Board's own construction of the words "right ahead."

The Board of Trade hold that the condition that the light shall be uniform over an arc of 10 points means that it shall be of uniform brilliancy over that arc, and that it is impossible to secure this without allowing the ex-focal rays to cross the bow.

I cannot say whether or no this alleged impossibility has ever been demonstrated, but in any case the Order limits the arc to 10 points, and forbids the showing of the light across the bow.

Result of an examination of existing side lights by Board of Trade surveyors.

To prove that the practice of angling lights is no innovation, Sir Digby Murray has shown me particulars of a recent examination by Board of Trade surveyors of the side lights of a number of vessels in London and Liverpool. These disclose variations in the screening of side lights ranging from 14° convergence to an angle of 4° divergence in each light, while in many cases the starboard and port lights were screened to different angles, the starboard light in one example being screened inwards to an angle of 5°, and the port light outwards to an angle of 4°. A passenger ship is mentioned, both of whose lights could be seen at once from a point 20 ft. abaft the stem.

On the other hand, in the case of one "large line of passenger steamships," as well as in isolated instances, the side lights were reported as being screened parallel to the keel.

Whether, however, it is proved on inspection that the practice of angling side lights has prevailed in the past or not does not really affect the question. That the law had been broken by many in the past, would not be a good reason why in the future it should be broken by all.

Proved lack of attention to side lights hitherto.

One thing the figures I have quoted certainly show. That it is high time attention should be directed to the subject of side lights, with a view to bringing about precision and uniformity in practice with regard to them. Uniformity in itself, however, is not a virtue, and until the law is altered the practice should, I think, be uniformly in accordance with what I take to be the meaning of the rules sanctioned by the Order in Council, and not with what I venture to call the strained intrepretation which the Board of Trade put upon it in order to extract from the law a sanction for the change.

So much for the question of legality.

Expediency of Board of Trade interpretation.

Now for the question of the relative expediency of the two interpretations.

Diagram No. 1.—Parallel screening.

No. 1* is an enlargement of a diagram prepared by the Board of Trade to illustrate the one objection which they have raised to what I may distinguish as parallel screening, viz., that as light travels in straight lines, there must be what they call a dark lane, varying with the width of the ship, within which neither side light would be visible however great the distance from them. They do not speak of the mast-head light.

*Notes by Sir Digby Murray on Diagram* 1.

"It does not matter what the breadth, or the relative "breadth, of the steamships may be, if the lights are "screened as shown it is a mathematical impossibility "for an observer in any position whatever to see both "the side lights at one and the same time.

"A and B are two steamships meeting end on. The "officer of the watch on board of A cannot see the side "lights of B, no matter on what part of the bridge he is

* The latest Order of Council dealing *inter alia* with this subject was made under the Merchant Shipping Act Amendment Act of 1862, and is dated 11th August 1884.

* Plate XII.

**DIAGRAM 1.** *As given by Sir Digby Murray, with vessel B twice the breadth of vessel A shewing "dark lane" when lights are screened parallel to the line of keel.*

**DIAGRAM 2.** *Shewing two Vessels, each 300 feet long, One nautical mile distant, lights screened to 4°*

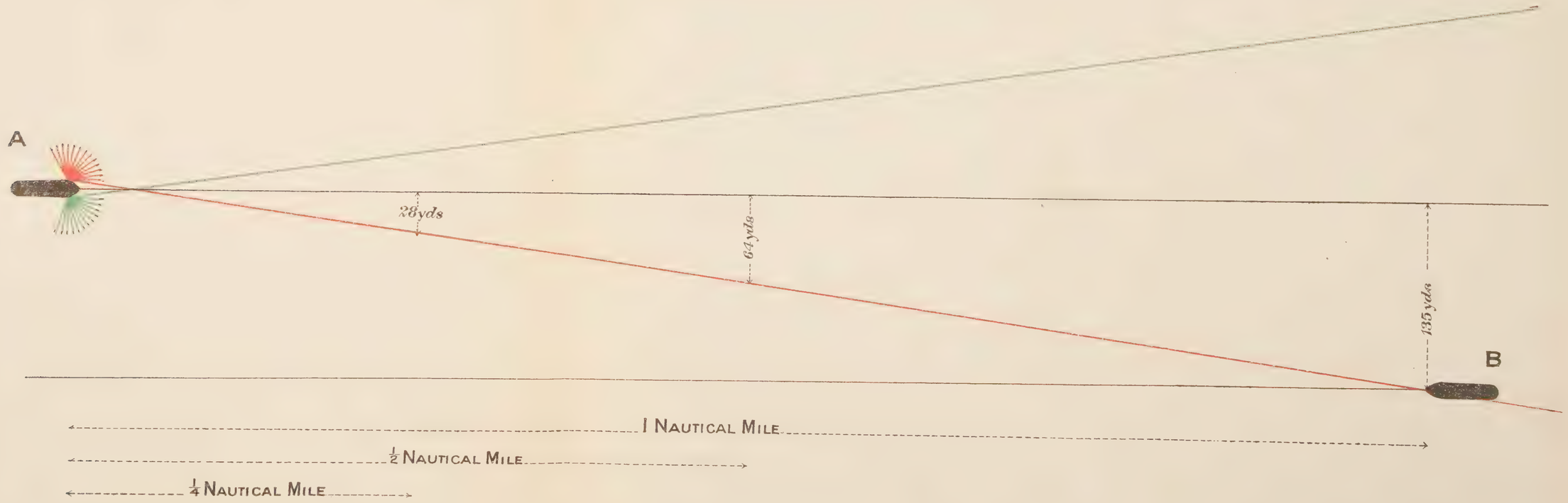



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**DIAGRAM 3.** *Shewing position of Danger arising from meeting of Steamers with lights screened in different manners.*

A. *Steamer which has had its lights altered to the 4° angle across the bow.*
B. *Steamer which has not had its lights altered to the 4° angle across the bow.*

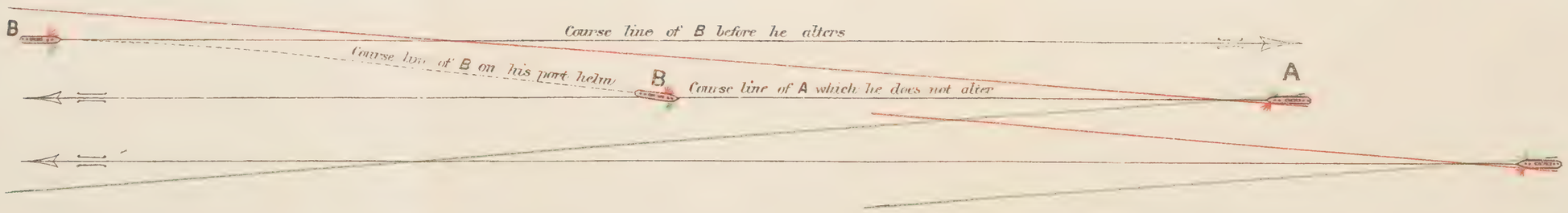
---

A. *Sees B's Mast-head and Green lights on his Starboard side, Green to Green, and continues his course.*
B. *Sees A's Mast-head, Green and Red lights and naturally thinks that A is coming directly towards him (he being ignorant of the change in A's lights) and ports his helm.*
A. *Can't make out what B is porting for.*
B. *Can't make out why he does not shut in A's Green light.*
*Neither Commander can understand the other's actions; hence the uncertainty at the bottom of all collisions.*

---

*The danger would of course be greatly increased when two or more vessels were proceeding parallel to and in same direction as A which constantly occurs in Channel course.*

---

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"standing, nor is it possible for the officer of the watch "on board A to see both side lights of B at the same "time, no matter how the position of A with reference "to B may be varied.

"The officer of the watch on board of B if he stands in "the middle of the bridge cannot see either of the side "lights of A.

"If he stands on the extreme starboard side of the "bridge he sees the red-light only, and if he stands on "the extreme port side of the bridge he sees the green "light only, nor can the position of B be varied so as to "enable him to see both the side lights of A at one and "the same time.

"To remedy this state of things, the side lights must "cross at some angle ahead of the ship—Art. 3 (*b*) and (*c*) "say, 'so fixed as to throw the light from right ahead "to two points abaft the beam,' and the Board of Trade "have always construed 'right abead' to mean right "ahead of the ship.

"The Washington Conference say—'The side lights "'should be so screened as to prevent the most conver-"'gent rays of the light being seen across the bows more "'than half a point.' The Board of Trade, after careful "experiments, have fixed this angle at 4° measured "from the outer edge of the wick. If the wick is 1¼ ins. "in width, the angle will be about 3° if measured from "the centre, and 2° if measured from the inside edge "of the wick."

The "dark lane" difficulty.

It is, no doubt, mathematically true that there would be such a dark lane, but I have not been able to obtain evidence that any navigator ever noticed it, still less that any collision has ever been traced to that cause. And for this reason, no doubt; that the course of a ship under way is not mathematically straight. If we could conceive of two ships approaching each other on parallel lines of rail, one set within the other, on something like broad and narrow gauges, the dark lane might but for the mast-head light be a real danger. The sight of that light would let the navigator know that there was something there, and it would be his duty to keep clear. But, in fact, I believe it is fine steering under the most favourable conditions of sea and wind to keep a ship steady within 2° of a straight course. It follows that the dark lane is always being thrown about just as a bright lane is thrown about by a projector. It "cannot rest."

Assuming, therefore (and it is a considerable assumption), that two ships should approach one another dead end on, an almost imperceptible yaw would suffice to make one or other of the side lights visible. The greater the distance the ships are apart the larger the arc through which the dark lane is perpetually travelling and with it the rays of the side lights, and the more minute the angle of deviation required. To take the case of our diagram, the arc over which the dark lane has to travel in order to render the side lights of B visible to A would be some 10 to 15 feet either way. The yaw required to effect this, assuming the required arc to be 15 feet, would be:—

At a distance of 2 nautical miles, 4·2 minutes, or say $\frac{1}{15}$ of a degree.

At a distance of 1 nautical mile, 8·4 minutes, or say $\frac{1}{7}$ of a degree.

At a distance of ½ nautical mile, 16·9 minutes, or say $\frac{2}{7}$ of a degree.

At a distance of ¼ nautical mile, 33·8 minutes, or say $\frac{4}{7}$ of a degree.

I have not made the calculation for a distance of less than a quarter of a mile, because even slow steamers approach each other at a speed which would bring them together in from 40 to 60 seconds after first seeing each other at a quarter of a mile distance, and at shorter distances than this there would not, as a rule, be time for the ships to go clear.

The Board of Trade, on this diagram, assume, in order to strengthen their argument, an officer stationary on one spot in the centre of B's bridge. But the Order in Council does not speak of a particular officer in a particular position. It speaks broadly of the *ship* as "seeing." It assumes that a good look-out is kept, and that being granted, even if A failed to see B's side lights, an officer at either end of B's bridge will see A's, whereupon B would at once alter her course, and by so doing, disclose one of her side lights to A. The mast-head lights of both vessels would, as I have said, be all the time visible to each other.

Diagram No. 2.—Convergent screening.

Having dealt with the objection to parallel screening, I turn to the scheme for convergent screening, advocated by the Board of Trade, the object of which is to obviate what, as I have indicated, I think is a merely imaginary danger. This diagram, No. 2,* is intended to illustrate the practical bearing of such screening. It will be obvious that, to any ship approaching another ship with side lights thus converging, the latter will appear within a certain triangle, no matter what course she is steering, to be coming end on to the former, that is to say, within the area where both lights are visible, the lights will give no indication of the course being steered. It will thus, under the present rule of the road, be frequently the duty of two ships approaching one another to cross each other's bows, when, by holding on their respective courses, they would have gone clear. They will therefore be running unnecessarily into danger, which, in waters where a succession of vessels may be encountered, will be constantly recurrent; the danger being at the same time aggravated when so manœuvring in narrow channels. Diagram No. 3† is intended to illustrate this.

App. C, No. 1.

Diagram No. 3.—Convergent screening specially dangerous in narrow channels.

Under similar circumstances, parallel screening would show whether or not the vessels might safely hold on their courses.

Summary.

I have now indicated my opinion, for what it may be worth, that the change, until sanctioned by an Order in Council, is illegal, and that the only objection to parallel screening is, from the practical point of view, a fanciful one, whereas convergent screening greatly impairs the value of the side lights as a means of notifying the course steered, and thereby gives rise to new dangers and inconveniences.

Protest of Trinity House Pilots.

I can give no better evidence of the verdict of practical men upon the Board of Trade's instructions than by mentioning that a petition (a copy of which I produce) has been presented against their introduction signed by about 150 Trinity House Pilots of the Port of London. I am informed that many more who would have wished to sign were at sea.

Laxity with regard to side lights would account for collision, &c.

As to the importance of uniformity, provided of course it does not involve a uniform violation of the law and is in the direction of safety, we are all agreed. It is quite possible that the explanation of much of the apparently hard cross-swearing, in collision cases, which has in the past been so severely commented upon, is to be found in the eccentricities in the screening of side lights.

Shipowners' claim to be consulted.

In a recent correspondence with a large steamship company, who protested against being compelled to accept the new instructions against their judgment, the Board of Trade, while continuing to insist that they have in no way altered the spirit of their previous instructions, state that, in deference to the doubts which have arisen in the minds of some shipowners, they are taking steps to have the interpretation of the clauses in dispute clearly determined by Order in Council. I have since heard a rumour that such an order has already been obtained.

I submit that no change in the screening of side lights should, in the first place, have been made without the shipping interest being fully consulted. Having been made, I submit that if, in consequence of criticisms passed on their action by shipowners, the Board was so dubious of the legality of their position as to seek to fortify it by an Order in Council, they ought, by that time at least, to have recognised that they were making a change, with regard to which the shipowners had a right to be consulted.

If in the Board of Trade's opinion our criticisms on the expediency of the change proceed from our ignorance of the subject, we should, I feel sure, be open to conversion. It must be remembered, however, that Foreign Maritime Powers must also be converted before any change can be safely adopted.

The time available will not permit of more detail, and I can but hope that I have made out a case to warrant the serious attention of this Chamber to the matter.

Before concluding I desire to call attention to a recommendation in the Board of Trade instructions to the effect that the side lights should be placed as far forward as practicable. This view is not shared by the captains, pilots, &c., whom I have consulted. The side lights, if placed at some considerable distance abaft the mast-head light, give, in connection with it, a valuable indication of any material alteration in the vessel's course, a fact which seems to have been lost sight of by the Board of Trade.

* Plate XII. † Plate XIII.

App. 6, Nos. 2 and 3.

No. 2.—Copy of Protest by Trinity House Pilots against the rule requiring Lights to be Screened to 4°.

We the undersigned, Trinity House Pilots for the Port of London, do hereby earnestly protest against the danger of violating the International Law relating to the screening of ships' side lights, which law compels all vessels to exhibit the red and the green light showing from right ahead to two points abaft the beam.

The system lately introduced by the Board of Trade of screening the side lights 4° in-board, causes them to be seen across the bow, which we consider misleading, and attended with considerable danger to navigation.

The dark lane this alteration is intended to destroy, is practically non-existent.

(Signed)—
Thomas T. Hogg.
A. J. Couves.
Thomas H. Lygo.
Henry Porss.
W. H. Giles.
J. H. Wyatt.
J. Brady.
Thomas H. Whitaker.
W. C. Couves.
W. H. Brown.
John Gunn.
George Walker.
John D. Pentin.
A. Couves.
J. Walden.
John H. Henderson.
Joseph Doust.
John T. Foster.
James A. Goodhew.
George Wm. Chaney.
Philip Bray.
J. J. Mitcheli.
Joseph Pritchard.
Benjamin Martin.
D. T. Mulley.
E. P. Fisher.
F. B. Youngman.
G. D. Humphreys.
H. Davis.
G. W. Youngs.

(Signed)—
F. W. Brufton.
A. R. Fisher.
John Ellison.
Stephen Hubbard.
Alfred Spiers.
Richard Posgate.
J. G. Scott.
W. R. Roxberry.
F. E. Allen.
George Doust.
R. H. Holland.
A. Pattison.
G. R. Stanley.
John Willmott.
T. G. Sandford.
William Miller.
S. H. Brown.
J. H. Fothergill.
A. Smith.
Wm. W. Parsonson.
G. Sandford.
J. A. Gillett.
J. J. Sparrow.
G. Smith.
John Denton.
Walter J. Hayward.
George John Smith.
Thomas Martin.
John J. Oates.
Henry E. Ray.

(Signed)—
P. J. Pentin.
R. Albert.
Richard West.
Stephen Pascoe.
Charles Scott.
Amos Louwry.
S. Willard.
T. J. Kennedy.
George F. Payne.
John Fairbairn.
F. F. White.
George E. Posgate.
W. Mulley.
W. Wiseman.
Thomas Squire.
R. H. Pope.
J. Kemp.
C. H. Waterson.
A. R. Fisher.
Walter C. Mee.
A. L. Sandford.
J. Reader.
S. Spiers.
G. Pettman.
H. P. Chapman.
J. A. Smith.
D. Cole.
G. Tansley.
J. C. Walker.
C. J. Letten.
A. H. Bates.
J. C. Walker, Sen.
W. F. Payne.
W. H. Sandford.
S. A. Lockhart.
R. W. Liley.
W. G. Beard.
C. R. Hevill.
J. P. Tuisst.
H. G. Row.
A. W. Williams.
G. R. Larnder.
C. Duffin.

(Signed)—
William Young.
R. Parkinson.
A. W. Harvey.
Alfred Read.
W. A. Geach.
J. C. Busby.
G. Braine.
J. H. Daines.
John Braine.
William Barfield.
Thomas Bigg.
J. T. Posgate.
Joseph May.
Thomas Stanley.
Henry Foster.
E. Rigden.
G. Finnis.
T. B. Hawksfield.
T. B. Perkins.
W. White.
D. T. Rigden.
G. H. Weake.
J. H. Weake.
G. C. Spain.
T. G. Godden.
W. Moon.
W. Spouse.
W. E. Allen.
G. W. Bell.
Wm. Wellsted.
J. M. Walker.
Wm. Ralph.
S. Belchamber.
G. Wellard Finnis.
Thos. C. Camburn.
J. W. Gillman.
Edward J. Arnold.
Wm. Jas. Finnis.
S. G. Laming.
Geo. Harrison.

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No. 3.—Copy of Correspondence between the Chamber of Shipping and the Board of Trade on the subject of the Screening of Ships' Side Lights.

*Ships' Side Lights.*

Chamber of Shipping,
London, 22nd February 1893.

Sir,

It is but lately, that a deputation from the Chamber of Shipping had the honour of being received by you. Among the objects of their seeking an interview, by far the most important was to urge upon you the dangers attendant upon the new instructions issued to your surveyors as to the screening of side lights, to question their legality, and to ask that until further considered the instructions should be held in suspense. The deputation was most courteously received, but your answer on that matter was not favourable. They were told that the new instructions involved no change, that the sanction of the law had subsequently to their issue been obtained through an Order in Council, and in effect that they would be enforced forthwith.

The same answer substantially has been given to questions since asked in Parliament.

The statement that no change in practice is involved does not accord with the judgment or experience of my Council, nor, as it appears to them, is it consonant with the necessity for the sanction of a new order.

Although neither re-assured nor convinced, it was not possible for the deputation to do more than enter the protest of this Chamber, and it is only the extreme gravity of the subject which compels me now to address you again.

Great stress has been laid by your Board in their communications with shipowners, whether individually or collectively, upon the high sanction and authority lent to the new regulations by a resolution adopted at the International Marine Conference, held at Washington in 1889. It has indeed been alluded to by Sir Digby Murray as the source which inspired and promoted the revision.

It was therefore to have been expected that a reference to the protocols of the proceedings of the Conference, even if the arguments adduced in favour of the resolution failed to dispel our objections, would at least be convincing as to the soundness of the conclusions arrived at, provided the premises from which the Conference started were granted.

The resolution ultimately adopted by a majority of 16 to 3, the United States delegates being among the dissentients, reads as follows:—

> "Side lights should be so screened as to prevent the most convergent rays of light being seen more than half a point across the bow."

The discussion presents many points upon which I should like to comment, but my immediate purpose is confined to tracing the grounds upon which the angle of half a point is adopted.

The chain of reasoning is clearly given, *see* page 189 of the Protocols, by Captain Mensing, of the German Navy. "There is," he says, "very little more to be said, except to explain how we came to adopt the angle of half a point."

His explanation which follows may be summarised thus:—

The rule laid down by the Board of Trade for the guidance of their surveyors is that the rays from the two side lights shall cross at a distance ahead of the lights equal to 10 times the beam of the ship. The angle included within the rays converging at such a distance ahead is half a point. Therefore, he concludes, the angle at which each light would be seen across the bow is half a point. No conclusion could sound more plausible or be more erroneous. The angle included by the rays will, it is true, be half a point or thereabouts, but that is the angle formed

by the convergence of the two side lights, and to form such a *combined* angle the convergence of each side light must obviously be only a *quarter* of a point, or one half of the combined convergence.

Side lights converging each to an angle of half a point would intersect at a distance ahead of the ship, not of 10 beams as the Conference supposed, but of five beams, and would include an angle not of half a point, but of a whole point.

The accompanying diagram is intended to illustrate what I have said.

It is sufficiently remarkable that Captain Mensing, and the Conference in his wake, should have unconsciously doubled the angle of convergence of each side light.

It is far more remarkable that a flaw so grave as wholly to vitiate the conclusion arrived at by the Conference, should have passed undiscovered by your Board.

The Conference, believing they were merely endorsing the practice of the Board of Trade, passed the resolution, and the Board of Trade in turn, without adequate scrutiny of the premises upon which the resolution was based, have proceeded to enforce upon British shipowners, despite their protests, the issue of an undetected blunder.

The danger of enforcing a principle which has a fallacy for its foundation, is so obvious that I would again most respectfully urge upon you the expediency of the new regulations being suspended until the question has been thoroughly investigated by a committee upon which the shipowning interest is properly represented.

Let me add that the captains and officers of the Mercantile Marine are practically unanimous in condemning the change as dangerous; so too are the London Trinity House Pilots, of whose protest on the subject I beg to inclose a copy with the names of the signatories attached. The original is in my keeping.

I have, &c.,
(Signed) MARK WHITWILL,
President of the Chamber of Shipping
of the United Kingdom.

To the Right Hon. A. J. Mundella, M.P.,
President of the Board of Trade,
Whitehall.

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Board of Trade,
Marine Department,
SIR, London, S.W., 25th February 1893.

I AM directed by the Board of Trade to acknowledge the receipt of your letter of the 22nd instant, stating that the resolution of the Washington Marine Conference as to the angle of screening of side lights was adopted under a misapprehension, and requesting that the Order in Council recently made should not come into operation until the question has been thoroughly investigated by a committee on which shipowners are properly represented.

In reply I am to state that the Board will give careful consideration to the points raised in your letter, and will communicate again with you on the subject.

I am, &c.
(Signed) GEORGE J. SWANSTON.

Mark Whitwill, Esq.,
President of the Chamber of
Shipping, Whittington House,
Leadenhall Street, E.C.

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Board of Trade,
Marine Department,
SIR, London, S.W., 8th March 1893.

WITH further reference to your letter of the 22nd ulto., in regard to the recent Order in Council as to the screening of side lights, I am directed by the Board of Trade to state that the regulation therein contained was based on actual experiments carried out by officers of the Board of Trade, and not on any resolution passed by the Washington Conference.

As the Order in Council is only interpretative, the Board are unable to accede to the request of the Chamber of Shipping.

I am, &c.,
(Signed) GEORGE J. SWANSTON.

To Mark Whitwill, Esq.,
President of the Chamber
of Shipping.

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SIR, 21st March 1893. APP. C, No. 3.

I HAVE to acknowledge your letter of the 8th instant, in further reply to mine of the 22nd February.

I called your attention in my letter to the grave error, upon which is founded the resolution of the Washington Conference, as to the screening of ships' side lights.

I do not find that I anywhere asserted that the new Order in Council "is based upon the resolution of the "Washington Conference." I have no means of knowing with certainty by what process of reasoning your Board arrived at the conclusions adopted in the Order, or on what representations that Order was obtained.

If, however, you desire now to insist that the new regulations have their origin in independent investigations, uninfluenced by the conclusions of the Conference, I cannot think such a contention accords with the repeated reference made by your Board to those conclusions as having prompted and inspired the revision.

I would further point out that the memorandum drawn up by Sir Digby Murray, embodying the results of these independent experiments, was avowedly a report "on two points contained in resolutions adopted "by the Washington Conference." This in itself supplies proof of the origin of the Order.

It would, perhaps, be as accurate to say that the experiments were based upon the resolution of the Conference, as to say that the Order in Council was based upon the experiments.

The results obtained from the experiments were happily not such as to permit Sir Digby Murray and Mr. Samson to recommend the adoption of the full half-point convergence, however strongly or however little they were predisposed to do so. They adopted, for what reason does not appear, a compromise, and reported in favor of an angle of 4° of convergence. They did not detect the fallacy which vitiated the conclusions of the Conference, and consequently were not aware that they were increasing the angle of convergence previously recognised by the practice of your Board, from, roughly, 2¾° to 4°. There is nothing I submit in the results of the experiments as reported to recommend such an increase.

The recommendation as well as the statements repeatedly made in Parliament, that no change has been introduced, are explicable only on the supposition that your officers followed the lead of the Conference and accepted the delusion involved.

So strong was the delusion that our earlier remonstrances were met by an absolute, I might almost say a passionate, rejection. Though the chocks in every one of their ships were pared down, shipowners were expected to be content with an authoritative assurance that there was no change. Their protests were regarded as the outcome of prejudice. "Numerous criticisms," says a circular issued at this time to the surveying officers of the Board, "have been made, by people "ignorant of the subject, on the Board's recent in- "structions as to the screening of side lights; in one "case, I regret to say, by one of our own officers, who "ought to have been better informed." Departmental Notice, No. 5, Marine Department, Board of Trade, November 1892.

I put it to you, Sir, most respectfully, whether such language was not calculated to stifle the counsel which might otherwise have been received from the Nautical Surveyors of the Board?

You say that the new Order is "only interpretative" of the old. I maintain that in this essential particular of screening the new Order has imposed a construction which reverses the obvious and legitimate meaning of the international rule. The resolution of the Washington Conference was not an interpretation, it was unwittingly an amendment. The new Order is not an interpretation, it is also, as I believe, an unwitting amendment. They both, differing only in degree, introduce a new principle absolutely inconsistent with practical adherence to the international rule, and I would remind you that the U.S. delegates at the Conference strenuously resisted the resolution, because it was inconsistent with and therefore, in their judgment, stultified the rule. *See* Protocols of Proceedings of the Washington Conference, particularly pages 190–191.

Whether, however, the word "interpretative" can by any straining of language be wrested to cover this radical change or not is for my purpose immaterial, as it does not touch the merits of the case. The fact remains that the effect of this "interpretation" is almost to double the angle of convergence as compared with past practice. The kernel of the

App. 6, No. 3.

matter lies in the question, is the conclusion embodied in the new regulations, no matter what fallacy may have underlain it, sound in itself?

In this connection I would again remind you I am supported by the practically unanimous opinion of this Chamber, of the captains and officers of the Mercantile Marine, and of the pilots.

You have refused the request for a departmental committee because the Order is "only interpretative." I confess I fail to grasp the sequence of thought between the decision you announce and the reason you assign for it. The reason is surely not a valid one if the interpretation, as I contend, is wrong and dangerous.

I feel, however, that for the present I cannot advantageously push my protest further except by publishing this correspondence. This I propose to do, along with any further communication you may send me within the next few days.

I am, &c.,
(Signed) MARK WHITWILL,
President of the Chamber of Shipping of the United Kingdom.

The Right Hon. A. J. Mundella, M.P.,
President of the Board of Trade.
Whitehall Gardens, S.W.

## APPENDIX No. 7.

*Papers handed in by Captain Ruthven.*

App. 7, Nos. 1 and 2.

No. 1.*—Copy of the original measurements and calculations to ascertain the angle of convergence of the R.M.T.S. "Ophir's" electric side lights after the chocks had been cut away by the Board of Trade Surveyors, July 1892.

*Explanation.*

The inclination of the chock was got by very careful measurements from the mid-ship line of the bridge.

A line was ruled along the clearly-defined edge of the shadow, and the measurements on the chock were then taken with the greatest care.

From this data the angles and distances were then calculated.

The mean of the two distances on the opposite page, give 311 feet as the crossing point of the lights ahead of the ship.

This distance was measured with a lead line just after dark in Naples, and found to be 303 feet, 8 feet less than that got by calculation.

Had the lights been screened to 4° they would have crossed nearer still at about ·3 of the extreme length of the ship from the stern.

The line of the edge of the shadow produced was found to pass exactly through the position of the centre of the electric lamp L ascertained by measurements from H and G.

No. 2.—Diagram† showing that two vessels of 60 feet beam on diametrically opposite courses and one mile apart, each with the other's red light screened to 4° just shut out from the starboard end of her bridge, would pass 365 feet apart.

## APPENDIX No. 8.

*Papers handed in by Captain Mensing.*

App. 8, Nos. 1–3.

No. 1.—TABLE showing how the power of a side light is gradually lessened by the interference of a chock of thin blackened sheet iron fitted to a screen 1 metre [= 39¾″] long.

| Degrees. | 0° | 0°·5 | 1°·0 | 1°·5 | 2°·0 | 2°·5 | 2°·8 |
|---|---|---|---|---|---|---|---|
| Power of white light - | 60·5 | 56·3 | 47·6 | 31·9 | 16·7 | 4·7 | 0·72 |
| „ red „ - | 4·2 | 3·8 | 3·1 | 2·1 | 1·1 | 0·33 | 0·050 |
| „ green „ - | 5·4 | 4·8 | 4·1 | 2·9 | 1·6 | 0·46 | 0·069 |

The powers given refer as a unit to the standard Amyl Acetate lamp, the "Hefner Light," whose power is equal to 0·815 standard candle.

The observations were made by the Physicalisch Technische Reichsanstalt at Charlottenburg.

No. 2.—Diagram‡ showing the range of a ship's side lights when screened so as *not* to show across the bow.

No. 3.—Diagram§ showing the range of a ship's side lights when screened so as to show 4° across the bow.

## APPENDIX No. 9.

*Paper handed in by the Chairman.*

App. 9.

REPORT of EXPERIMENTS with SHIPS' SIDE LIGHTS, carried out at SHOEBURYNESS, for SIDE LIGHTS COMMITTEE, BOARD OF TRADE, on the 12th, 13th, and 14th June 1895.

*Description of Lamps.*

Four pairs of lamps were supplied marked A, B, C, D, also a masthead light.
All the burners were constructed for mineral oil. The remaining details were as below:—

| — | A | B | C | D | Masthead. |
|---|---|---|---|---|---|
| Size of wick - - - | $\frac{15}{16}$ in. - - | 1 in. - - | $\frac{7}{8}$ in. - - | $1\frac{1}{16}$ in. full - | $\frac{15}{16}$ in. |
| Number of wicks - - - | 2 | 1 | 2 | 1 | 2 |
| Number of holes in burner for flame. | 1 | 1 | 1 | 1 | 1 |
| Chimney - - - | Yes - - | Yes - - | Yes - - | Yes, wide chimney. | Yes. |
| Description of lens - - - | Dioptric - | Dioptric - - | Fishbowl - | Fishbowl - | Dioptric. |
| Number of corrugations - - | 6 | 10 | — | — | 8 |
| Lens coloured or not - - - | Coloured - | Clear; coloured screen. | Coloured - - | Coloured. | — |

The wicks of all the lamps were arranged at an angle of 44° with the line of the keel.

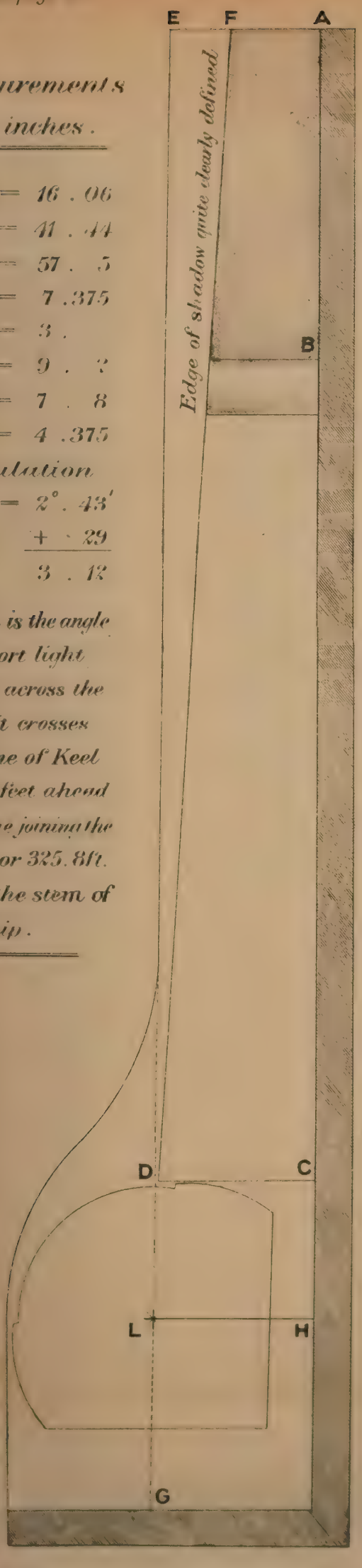
* Plate XIV. † Plate XV. ‡ Plate XVI. § Plate XVII.

easurements
in inches.

B = 16 . 06
C = 41 . 44
C = 57 . 5
D = 7 .375
F = 3 .
G = 9 . 2
H = 7 . 8
F = 4 .375

ulculation
DE = 2°. 43′
+ · 29
3 . 12

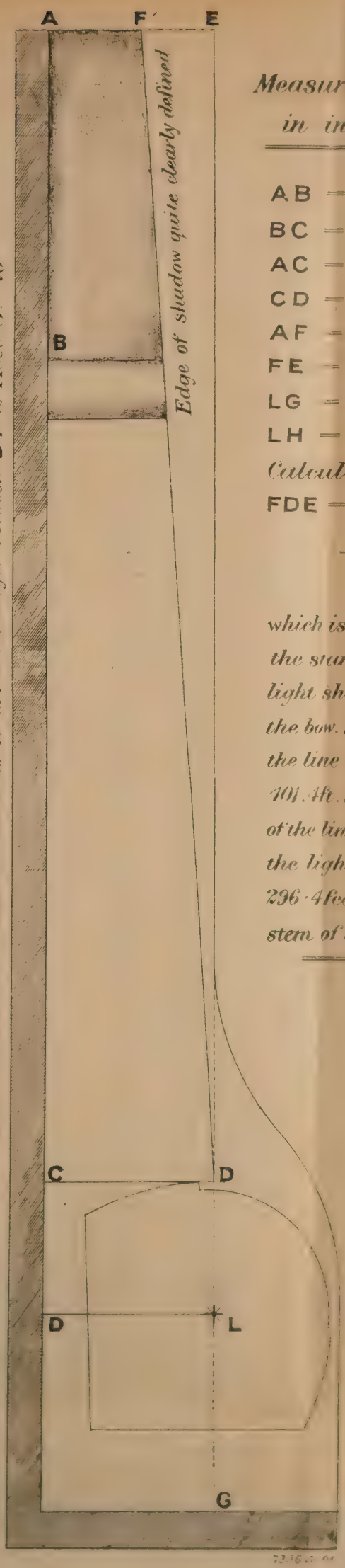
hich is the angle
e port light
ows across the
w. It crosses
e line of Keel
0·8 feet ahead
a line joining the
hts or 325.8ft.
m the stem of
e ship.




Port screen inclines towards bow 29′ & makes angle between DF & plane of Keel 3°. 12′

Starboard screen inclines outwards 10′ & makes angle between DF & Keel 3°. 26′

Scale 2 inches = 1 Foot.




Measurements
in inches.

AB = 16 . 06
BC = 41 . 44
AC = 57 . 5
CD = 7 . 75
AF = 4 . 125
FE = 3 . 625
LG = 9 . 5
LH = 8 4

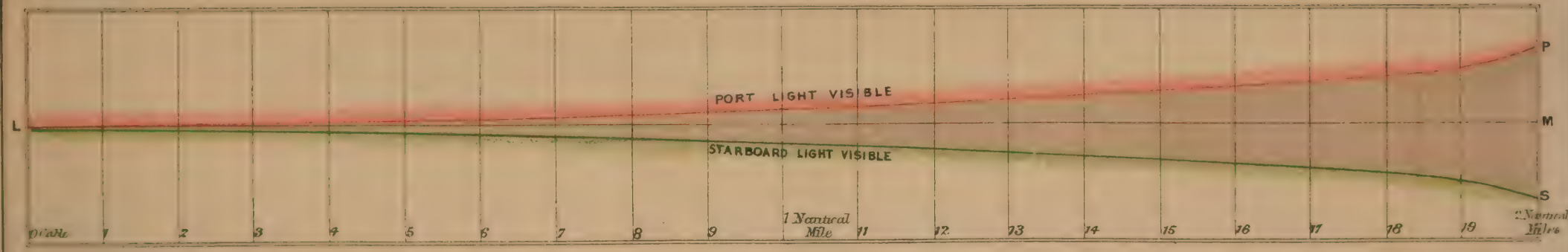
Calculation
FDE = 3°. 36′
— 10
3 . 26

which is the angle the starboard light shows across the bow. It crosses the line of Keel 301.4ft. forward of the line joining the lights or 296·4 feet from the stem of the ship.

## APPENDIX Nº 8.

### Nº 2. Diagram showing the Range of a Ship's Side-Lights when Screened so as NOT to Show across the Bow.

*Plate XVI.*




### Nº 3. Diagram Showing the Range of a Ship's Side-Lights when Screened so as to Show 4° across the Bow.

*Plate XVII*

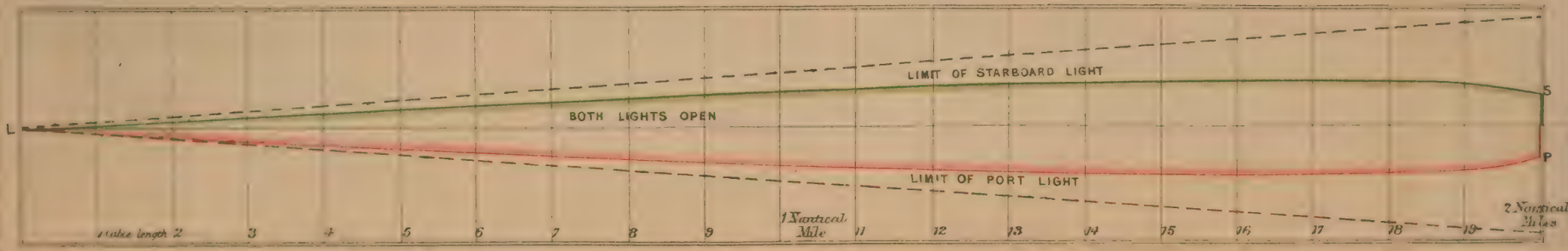
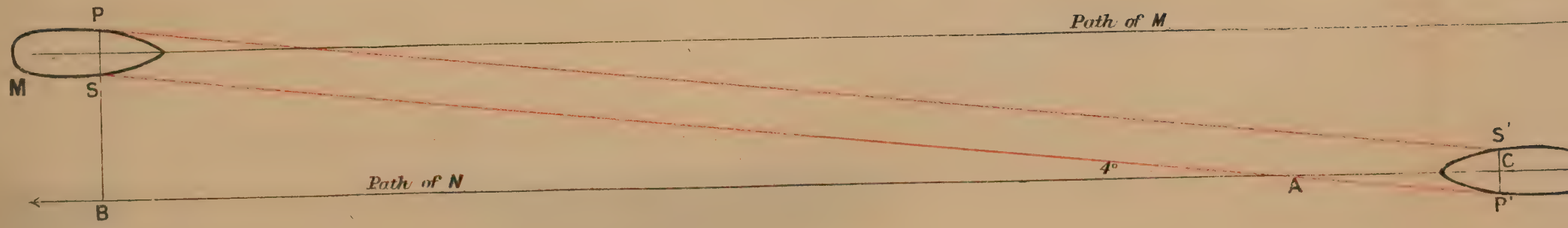



*Plate XVI and XVII. To face Plate XV.*

man & Sons, 13 Smith Zan

**Nº 2.** *Diagram (not drawn to scale) to show that two vessels of 60 feet beam on diametrically opposite courses and 1 Mile apart, each with the other's Red light screened to 4° just shut out from the Starboard end of her bridge, would pass 365 feet apart.*




$AC = P'C \cdot \text{cotan } A = 30 \times \text{cotan } 4° = 429$ feet - whence $AB = 6080 - 429 = 5651$ ft.
$BS = AC \cdot \cdot \tan A = 395$ feet & this less $CS' = 365$ feet which will be the distance between S & S' when abreast of each other.

*No allowance is made for the fact that if screened to 4° the angle A would exceed this however slightly when the light was shut out, or for the inevitable inaccuracies in steering which if only just shut out would disclose the Red light.*

J. P. Ruthven

*Arrangements.*

The side lights were placed in screens 45 feet apart from centre to centre of wicks, the screens being parallel to one another. The levels of the sands were at the following depths below the flames of the lamps: at 4,000 yards, 19·97 ft.; 2,000 yards, 17·6 ft.; 1,000 yards 16·85 ft.; 500 yards, 15·94 ft. A masthead light was shown at a height of 25 feet above the lamps on the first night, and 40 feet on the two subsequent nights, between the two lights.

The screens were so arranged as to be readily altered by means of chocks to give the angle of screening required. These chocks were all carefully measured and tested before commencing. The screens were laid truly parallel.

The Committee viewed the lamps from distances of 4,000, 2,000, 1,000 and 500 yards.

*Remarks on Observations.*

The weather was very favourable, and the observations may be considered as generally exceedingly accurate.

In considering the results, it must, however, be remembered that observations of this kind, depending upon the judgment and eyesight of different individuals, as well as upon variable atmospheric conditions, cannot be expected to agree exactly to a yard, either among themselves, or with the distances arrived at from theoretical considerations.

With reference, for instance, to the exact point at which a light ceases to show its full power, there is room for considerable difference of opinion among various observers, and the same may be stated as regards its final vanishing point.

The general agreement of these observations is therefore very satisfactory.

*Atmospheric Conditions.*

The weather on all these nights was much the same, atmosphere clear, light airs, not very dark but no moon before midnight, stars faint, cloudy at times. Lights at Sheerness and ships' lights in channel visible, also the Nore and Mouse lights. A slight rain at commencement of the third night, but not interfering with observations.

*Results.*

The results obtained will be found tabulated in Appendix I.

*Remarks* (a). *Observations with Lamps level.*

Those obtained at the various ranges with angles of screening, from outside of wick, of 4, 3, 2 and 1 degrees appear to be most satisfactory.

With reference to those taken when screened at 0° from inside of wick, there appears a discrepancy, the full lights of the respective lamps having crossed over as usual, at ranges of 1,000 and 2,000 yards, but judged not to reach the centre line at 4,000 yards.

It is thought that this observation, as to where the lights cease to be full at 4,000 yards, when screened to 0° from inside of wick might be repeated, if thought necessary, on the next opportunity. This observation was taken after moonrise, when the lamps were altering their appearance, owing to the increasing light and also to a tendency in the atmosphere to thicken, and several observations taken subsequent to this one, were afterwards decided to be unreliable, and erased from the record.

It is pointed out that the screening at 0° from inside of wick, is actually a somewhat wider angle than 1° from outside of wick, being equal to about 1° 12′ measured from the latter point.

(b.) *Observations with Lamps heeled.*

The screens were heeled by being merely canted over on their own bases to the required angle, the relative heights of the lamps above plane not being altered.

The results obtained will be found in the table, Appendix I.

*Comparison of Lamps of Different Patterns.*

App. 9.

On 13th June 1895 the A, B and C lamps were placed in succession in the screens, screened to 4° and observed from 4,000 yards.

Taking the value of the A lamps as 10 each, numerical values were assigned to the remainder as below—the green being compared with the green and the red with the red—

| | Port. | Starboard. |
|---|---|---|
| A Lamps - - | 10 | 10 |
| B „ - - | 11 | 9 |
| C „ - - - | 5 or 6 | 1 |

the above six lamps were then removed from the screens and placed in a row, showing about 5 points, at 10 ft. interval, but in an unknown order.

The Committee were able to pick out all the respective lamps without difficulty, and their observations proved to be correct.

The Committee then moved to 2,000 yards and decided that there was no change in the relative values of the six lights exhibited.

The D lamps were then substituted for the C, and were found much superior; the numerical values as judged by one of the observers being Port 9, Starboard 7½.

An officer was sent back to 4,000 yards and reported that both D lamps were distinctly visible at that distance through glasses, showing a good light equal in intensity to the A lamps (which were then showing screened to 4°), but smaller.

"*Dark Lane.*"

With the A lamps in the screens, and screened to 0° from inside of wick, the Committee on 13th June, 1895, drove straight down the centre line from 1,000 to about 480 yards, at which point the line had to be left owing to the soft mud. During this observation both lights were plainly visible all the way, bright, clear and of good colour.

On 14th June, 1895, by the use of special broad-wheeled wagons, the observation was continued, the lamps being screened as above, and the Committee drove straight in on to the lamps from 500 yards, and found that both lamps remained visible on the centre line, till within about 60 yards of the lamps.

On altering the screening, it was found that both lights could be seen on the centre line at distances of—

Screened to 2° outside of wick - 44 yards.
„ 4° „ - 33 „

With reference to these observations, at short ranges there is a quantity of light from the lens visible even after the entire wick is shut out by the screen. A table of the angles subtended at the screen by the exterior of the glass of the lanthorn as compared with the nominal screening is attached.—Appendix II.

*Diagrams.*

Six diagrams drawn to a scale of 50 yards to an inch, showing graphically the results of the observations taken, are attached to this Report. These also show the lateral distances, marked in figures and the angles subtended by those distances at the wick of the lamp are also marked.

It will be observed that at 4,000 yards the vanishing point of each light corresponds very closely with the angle to which the lamps were screened in each observation, but that at the longest ranges, the light had been waning in intensity for some distance short of this.

At the shorter ranges the lights show comparatively wider, as might be expected, as the rays from the lens here begin to tell.

Fred. Elmslie, Major, R.A.
Assistant Superintendent of Experiments.

Experiments carried out at Shoeburyness on 12th, 13th, and 14th June, 1895.

| Observation. | Screening. | At 4,000 yards. | At 2,000 yards. | At 1,000 yards. | At 500 yards. |
|---|---|---|---|---|---|
| | degrees. | Yards. | Yards. | Yards. | Yards. |
| *"A" Lamps outside wick.* | | | | | |
| Distance on Port Side, Green seen full | 4 | 65 | 70 (or more) | 35 | 23 |
| " " " disappears | 4 | 288 | 140 | 75 for colour 105 out. | 60 for colour 80 out. |
| " Starboard side, Red seen full | 4 | 60 | 77 | 50 | 17 |
| " " " disappears | 4 | 290 | 136 | 80 | 70 |
| " Port side, Green seen full | 3 | 43 | 55 | 31 | — |
| " " " disappears | 3 | 220 | 100 | 75 | — |
| " Starboard side, Red seen full | 3 | 47 | 55 | 26 | — |
| " " " disappears | 3 | 225 | 100 | 70 | — |
| " Port side, Green seen full | 2 | 31 | 38 | 22 | 7 |
| " " " disappears | 2 | 160 | 69 | 56 | 44 colour 70 out. |
| " Starboard side, Red seen full | 2 | 34 | 40 | 20 | 5 |
| " " " disappears | 2 | 150 | 65 | 31 | 47 practically |
| " Port side, Green seen full | 1 | 13 | — | — | — |
| " " " disappears | 1 | 73 | — | — | — |
| " Starboard side, Red seen full | 1 | 10 | — | — | — |
| " " " disappears | 1 | 60 | — | — | — |
| *"A" Lamps inside wick.* | | | | | |
| Distance on Port side, Green seen full | 0 | — | 12 | 5 | — |
| " " " disappears | 0 | 95 | 44 | 48 | 33 colour |
| " Starboard side, Red seen full | 0 | — | 10 | 6 | — |
| " " " disappears | 0 | 75 | 40 | 20 | 48 |
| " " Green seen full | 0 | 11 | — | — | $7\frac{1}{2}$ |
| " Port side, Red seen full | 0 | 11 | — | — | $7\frac{1}{2}$ |

| Observation. | Screening. | At 2,000 yards. | |
|---|---|---|---|
| Heeling Trial. *"A" Lamps outside wick.* | Degrees. | Heeled. 15° to Port. | Heeled. 15° to Starboard. |
| Distance on Port side, Green seen full | 4 | 85 | 82 |
| " " " disappears | 4 | 155 | 142 |
| " Starboard side, Red seen full | 4 | 95 | 90 |
| " " " disappears | 4 | 150 | 156 |
| " Port side, Green seen full | 2 | — | 35 |
| " " " disappears | 2 | — | 71 |
| " Starboard side, Red seen full | 2 | — | 35 |
| " " " disappears | 2 | — | 92 |

*Experiments with Ships' Lights, June* 1895.

Table showing the angles made by a tangent to the outer central surface of the lenses of the A lamps when the wicks are screened as below.—

| Screened outside of Wicks. | Port Lens Widest point 6″ beyond edge of 1° screen. | Starboard Lens. Widest part $5\frac{3}{4}$″ beyond edge of 1° screen. |
|---|---|---|
| ° | ° ″ | ° ″ |
| 1 | 9 36 | 9 12 |
| 2 | 10 36 | 10 12 |
| 3 | 11 36 | 11 12 |
| 4 | 12 36 | 12 12 |

Price K. Lewes, Lt., R.A.

*Explanation of the Diagrams.**

The distances from the centre line to the points of full light and disappearance are numbered in yards.

Lines are drawn from these points, converging on the centre line. The angles written against these lines are the angles made with the centre line, by a line joining the figured point and the wick of the lamp itself.

The distances to lamps in inches, as shown on the diagrams, should be measured in each case from the figure under consideration; as all the diagrams at each range should be super-imposed.

The lamps, on this scale, should be placed 0·15 ins. on either side of the centre line or 0·3 ins. apart.

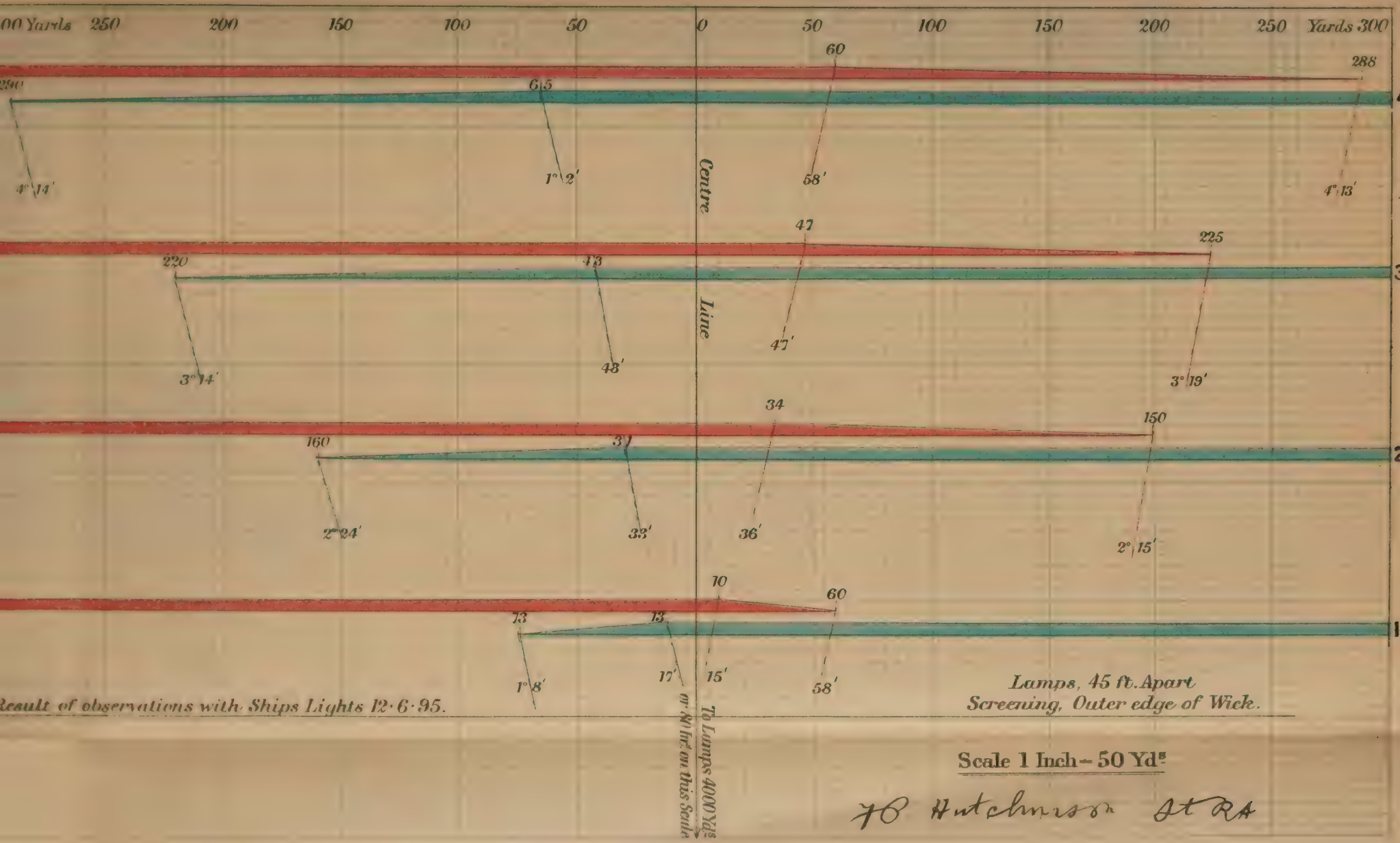
Fred Elmslie, Major, R.A.
Assistant Superintendent of Experiments.

* Plates XVIII., XIX., XX., XXI., XXII., and XXIII.

Note by Mr. Bolam, a Member of the Committee, as to the Hygrometric Condition of the Atmosphere during the above Experiments.

| Commenced. | Ended. | Relative Humidity. (100 = Saturation). Two Readings. | Mean. |
|---|---|---|---|
| 12th June, evening | 13th June, morning | 80 and 87 | 83·5 |
| 13th June, " | 14th June, " | 82 and 74 | 78·0 |
| 14th June, " | 15th June, " | 86 and 85 | 85·5 |
| | | 3 \| 247·0 | |
| Mean for oil lamp experiments | | | 82·3 |

# OBSERVATIONS TAKEN AT 4000 YARDS GRAPHICALLY REPRESENTED.




Result of observations with Ships Lights 12·6·95.

Lamps, 45 ft. Apart
Screening, Outer edge of Wick.

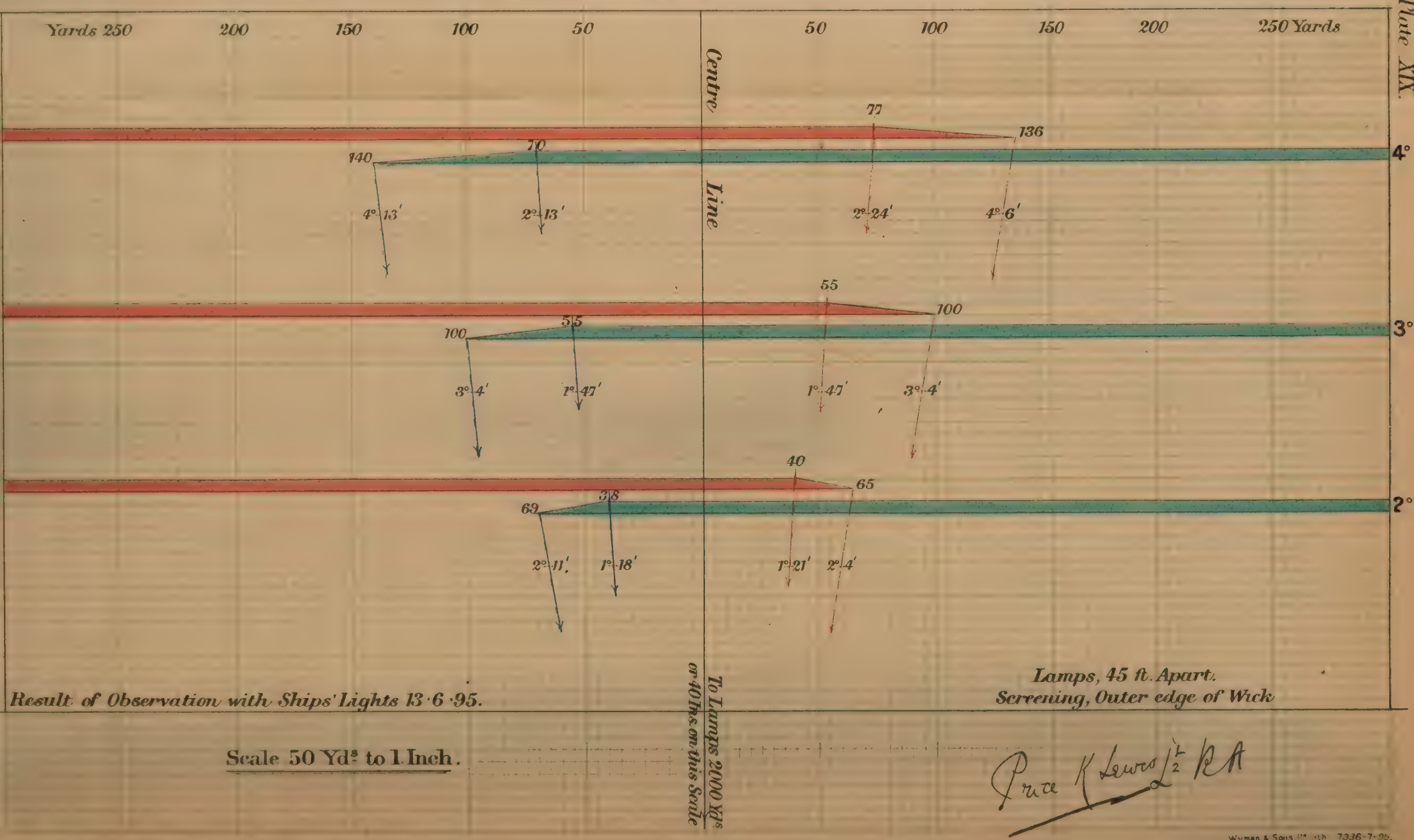
Scale 1 Inch = 50 Yds

JB Hutchinson Lt RA

Plate XVIII. To face page 272

# Observations taken at 2000 Yards Graphically represented.

Plate XIX.




*Result of Observation with Ships' Lights 13·6·95.*

*To Lamps 2000 Yds or 40 Lbs on this Scale*

*Lamps, 45 ft. Apart.*
*Screening, Outer edge of Wick*

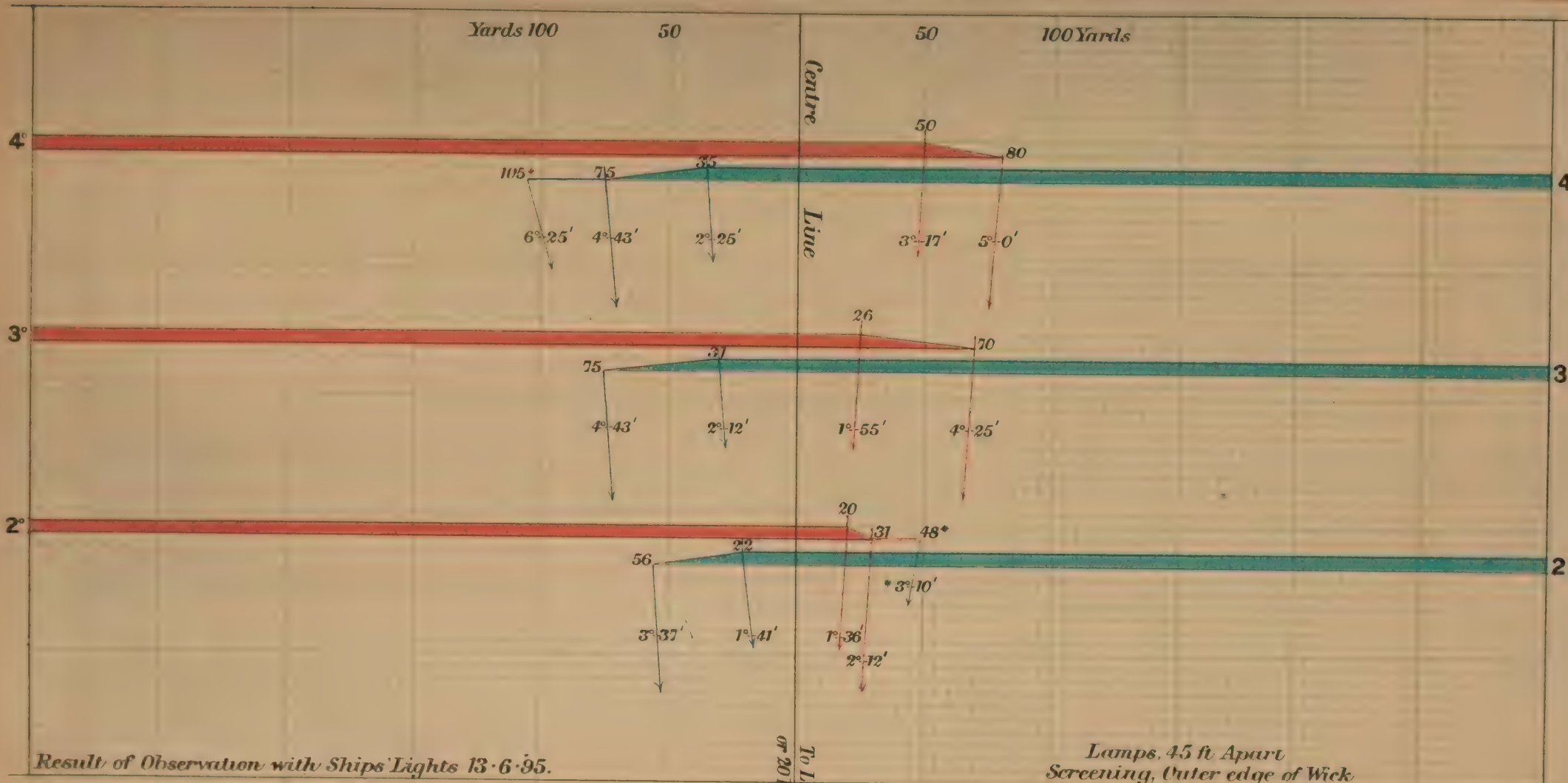
Scale 50 Yds to 1 Inch.

Price K Lewis Lt RA

Wyman & Sons, ... 7336·7·95.

# OBSERVATIONS TAKEN AT 1000 YARDS GRAPHICALLY REPRESENTED.






*Result of Observation with Ships' Lights 13·6·95.*

*Lamps, 45 ft Apart*
*Screening, Outer edge of Wick*

*To Lamps 1000 Yds or 20 Ins. on this Scale.*

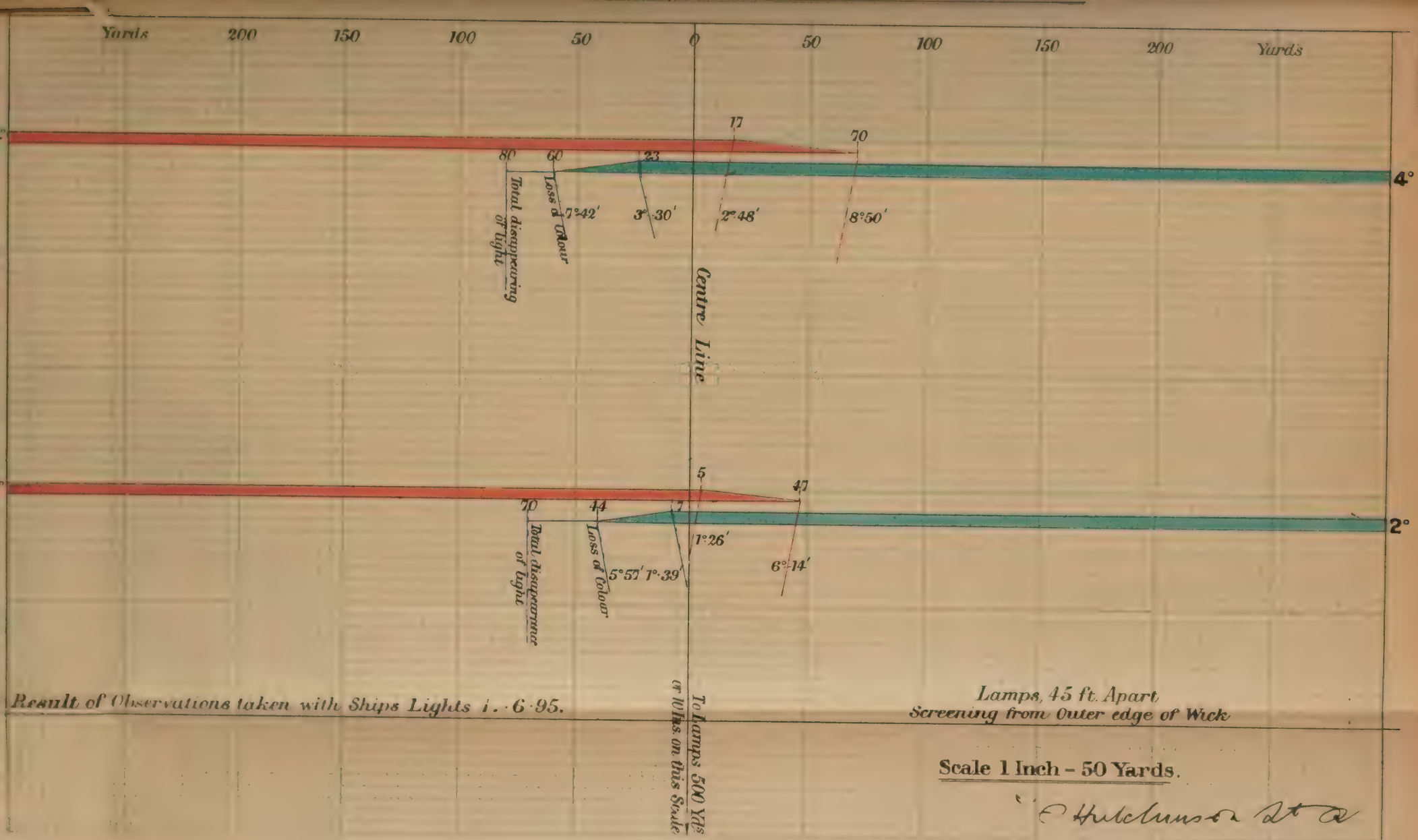
*Figures marked * are observations recorded by the observing Officers but disallowed by the Committee*

Scale 50 Yds to 1 Inch.

Bruce K Lewes Lt RA

W. Ryan & Sons ... (1) 73.26 / 95

Plate XXI.




*Result of Observations taken with Ships Lights 1.·6·95.*

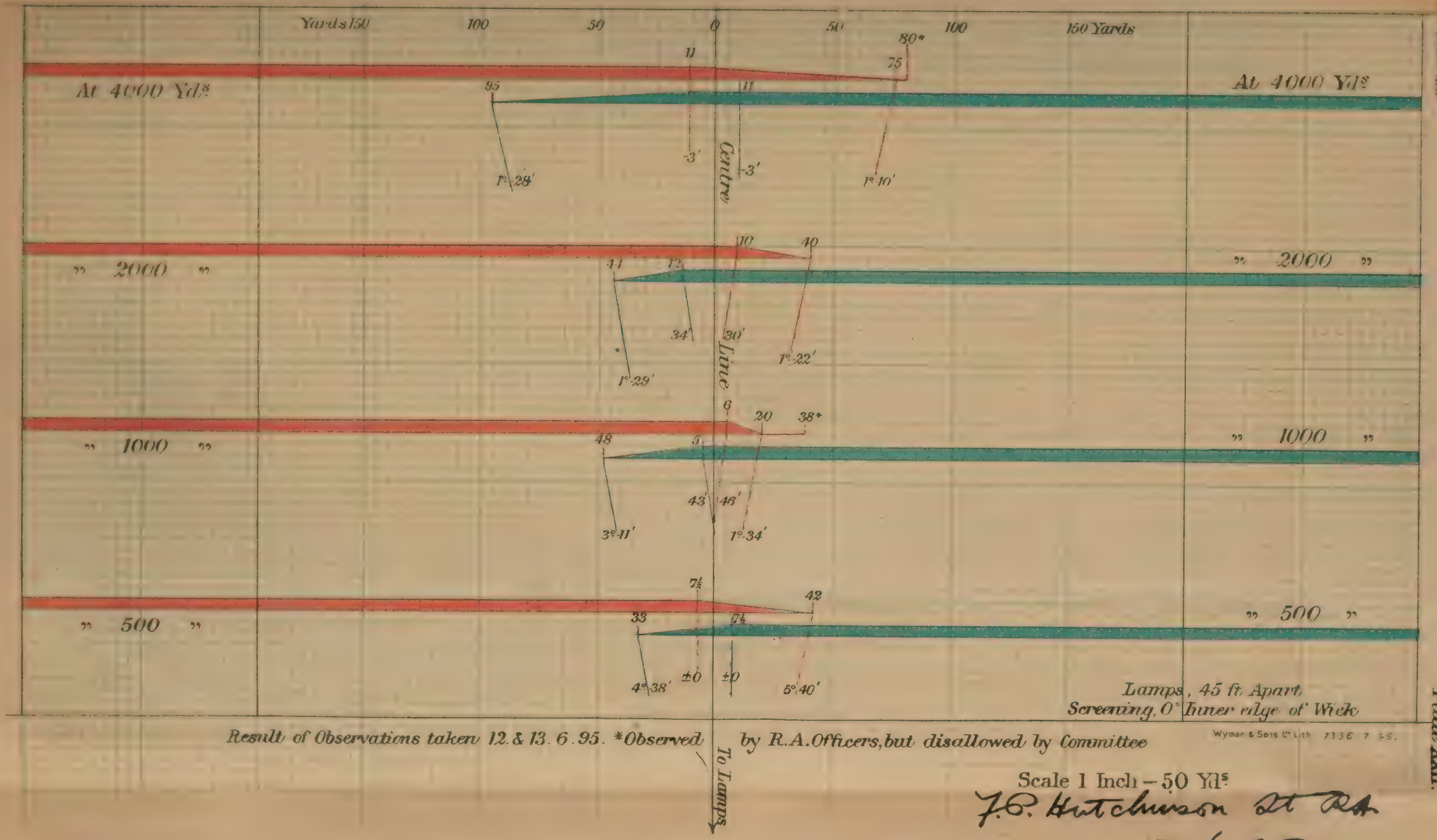
*Lamps, 45 ft. Apart*
*Screening from Outer edge of Wick*

**Scale 1 Inch – 50 Yards.**

E Hutchinson Lt R

WYMAN & SONS 7 JAN 7 95

# Observations taken with Screening from Inner Edge of Wick Graphically represented.




Result of Observations taken 12. & 13. 6. 95. *Observed by R.A. Officers, but disallowed by Committee

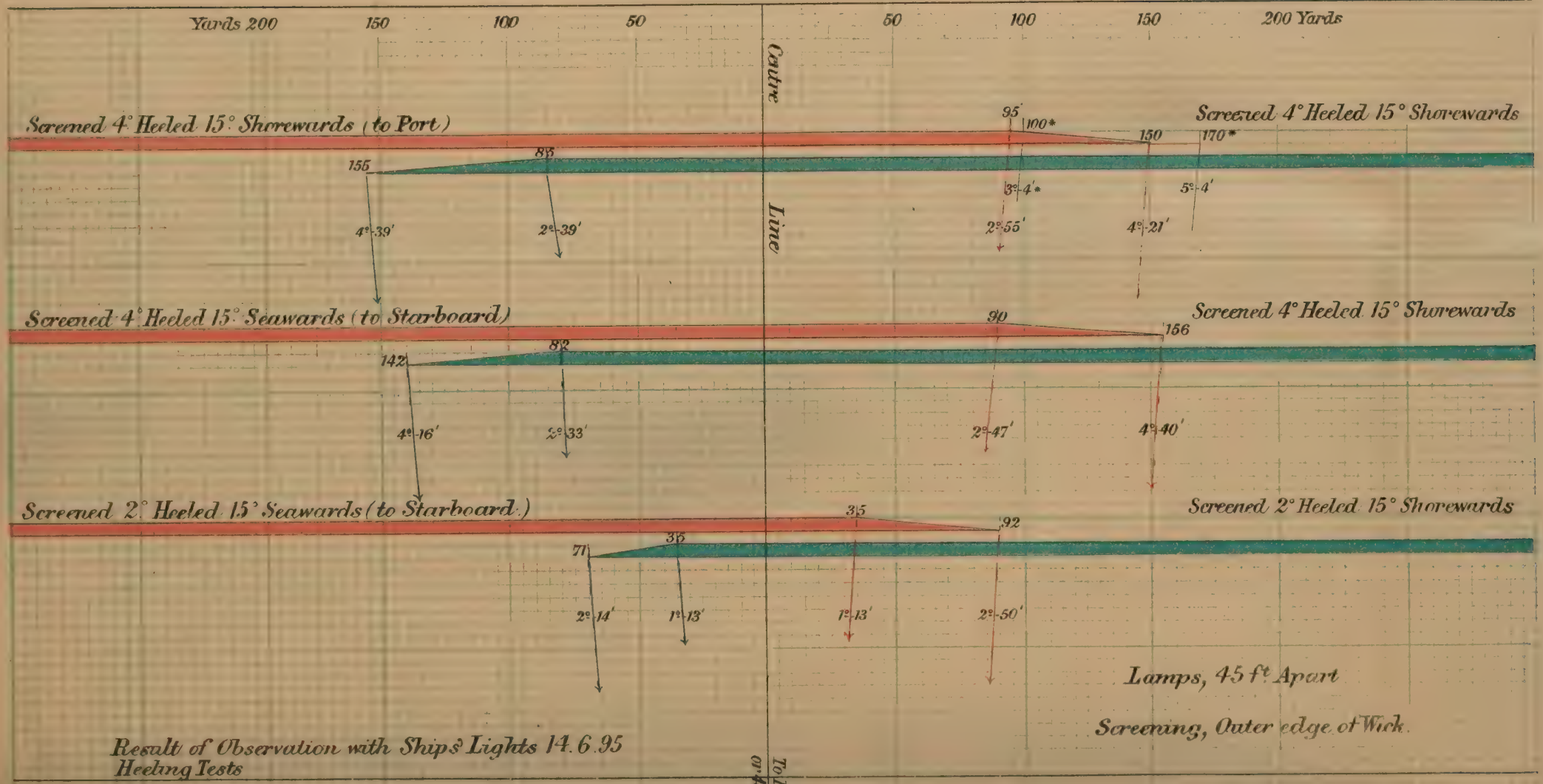
Wyman & Sons Lt° Lith 7336 7 95.

Scale 1 Inch – 50 Yds

F.B. Hutchinson Lt RA

17. 6. 95

# Observations taken at 2000 Yards Graphically represented.




Result of Observation with Ships Lights 14.6.95
Heeling Tests

Figures marked * are observations recorded by the observing Officers but disallowed by Committee.

Scale 50 Yds to 1 inch

To Lamps 2000 Yds or 40 Ins on this Scale

Prize Edwes 1/2 R.A.

To face page 253

# APPENDIX No. 10.

*Papers handed in by Captain Thomson.*

## No. 1.—Side Light Experiments at Silvertown Telegraph Works on the Nights of April 10th and 23rd, and May 6th, 1895.

The lights were exhibited from a building close to the river bank and viewed from the Dockyard wall on the opposite side of the river, the distance being 572 yards. The object of the experiments was to ascertain practically to what angle the diffused or scattered light from the lens would be visible at this distance with various illuminants and with angles of screening from 0 to 4 degrees.

At the distance at which the lights were viewed 1 minute of arc = 6 inches.

The sign + after an angular distance means that the light paled or cut off on the open side before the screening or zero line was reached.

### Side Light Experiments at Silvertown Telegraph Works, 6th May 1895. Electric Incandescent Lamps.

| Details of Electric Lights exhibited in the Lanterns. | | | | | | | | Lights viewed from a Distance of 572 Yards. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Crossing Angles to which the Light was observed to show. | | | | | |
| No. of Experiment. | Time. P.M. | Details of the Filaments. Shape. | Width. | C.p. Nominal. | How placed. | Colour of Glass Screen. | Lantern. | Screened to | Full Power to | Fair to | Dimly to | Practically disappeared at | Weather. | Remarks. |
| | H. M. | | | | | | | | ° ′ | ° ′ | ° ′ | ° ′ | | |
| 1 | 8 6 | Curl | 18 mm. = $\frac{11''}{16}$ | 32 | At right angles to the screen. | Green | "Harvie" dioptric, No. 22,592. | 0° from inside of filament - | 0 22 | 1 0 | 2 0 | 3 30 | Fine clear weather. Moonlight. | Green light; rather too clear a green, but very bright. |
| 2 | 8 20 | " | " | " | " | " | " | 1° " " - | 1 5 | 2 0 | 3 0 | 5 0 | " | |
| 3 | 8 11 | " | " | " | " | " | " | 2° " " - | 2 18 | 3 0 | 4 30 | 6 0 | " | |
| 4 | 8 22 | " | " | " | " | " | " | 2° from outside of filament - | 1 25 | 2 30 | 3 50 | 6 30 | " | |
| 5 | 8 15 | " | " | " | " | " | " | 4° " " - | 3 0 | 4 0 | 5 40 | 6 35 | " | |
| 6 | 8 40 | " | " | " | " | Red | " | 0° from inside of filament - | 0 24 | 1 5 | 2 19 | 4 30 | " | |
| 7 | 8 32 | " | " | " | " | " | " | 1° " " - | 1 10 | 2 0 | 3 24 | 5 30 | " | |
| 8 | 8 28 | " | " | " | " | " | " | 2° " " - | 2 0 | 3 0 | 4 0 | 5 25 | " | |
| 9 | 8 44 | " | " | " | " | " | " | 2° from outside of filament - | 1 0 | 2 0 | 3 41 | 6 10 | " | |
| 10 | 8 36 | " | " | " | " | " | " | 4° " " - | 3 0 | 4 41 | 5 50 | 7 19 | " | |
| 11 | 9 10 | Horseshoe | " | 16 | " | Green | " | 0° from inside of filament - | 0 18 | 1 42 | 2 30 | 4 14 | " | A good clear green light, equal to a coasting steamer's green light in mid-river. |
| 12 | 9 25 | " | " | " | " | " | " | 1° " " - | 1 46 | 2 42 | 3 40 | 5 41 | " | |
| 13 | 9 17 | " | " | " | " | " | " | 2° " " - | 2 18 | 3 30 | 4 30 | 6 0 | " | |
| 14 | 9 13 | " | " | " | " | " | " | 2° from outside of filament - | 1 32 | 2 47 | 3 55 | 5 35 | " | |
| 15 | 9 21 | " | " | " | " | " | " | 4° " " - | 3 48 | 4 41 | 5 40 | 7 13 | " | |
| 16 | 8 59 | " | " | " | " | Red | " | 0° from inside of filament - | 0 16 | 1 0 | 2 0 | 4 0 | " | |
| 17 | 9 2 | " | " | " | " | " | " | 1° " " - | 1 24 | 2 6 | 3 22 | 5 0 | " | |
| 18 | 9 5 | " | " | " | " | " | " | 2° " " - | 2 20 | 3 8 | 4 30 | 6 10 | " | |
| 19 | 8 55 | " | " | " | " | " | " | 2° from outside of filament - | 2 0 | 2 25 | 3 35 | 5 27 | " | |
| 20 | 8 48 | " | " | " | " | " | " | 4° " " - | 3 0 | 4 4 | 5 0 | 7 0 | " | |

Note.—The angle subtended by filaments at the slide = 0° 52′. Only one lantern used during these experiments, the coloured glass screen being changed as necessary.

Anthony S. Thomson.

April 23rd, 1895.—Experiments with a Straight Central Incandescent Filament about 6 inches long (practically a vertical line of light), 8 c.p.

| STARBOARD. | | | | | | | | PORT. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Experiment. | Time. P.M. | Screening. | Crossing Angles at which Light appeared. Full Power to | Fair to | Dimly to | Practically disappeared at | Remarks. | No. of Experiment. | Time. P.M. | Screening. | Crossing Angles at which Light appeared. Full Power to | Fair to | Dimly to | Practically disappeared at | Remarks. |
| | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | | | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | |
| 1 | 8 7 | To 0 degrees | 0 14 + | 0 16 | 1 0 | 2 0 | | 6 | 8 15 | To 0 degrees | 0 18 + | 1 0 | 1 24 | 2 0 | |
| 2 | 8 34 | „ 1 „ | 0 35 | 1 0 | 2 0 | 3 0 | | 7 | 8 38 | „ 1 „ | 0 50 | 2 20 | 2 50 | 3 5 | |
| 3 | 8 50 | „ 2 „ | 1 48 | 2 42 | 3 24 | 4 0 | | 8 | 8 55 | „ 2 „ | 2 0 | 3 18 | 3 56 | 4 20 | |
| 4 | 8 22 | „ 3 „ | 2 15 | 3 0 | 3 50 | 5 0 | | 9 | 8 30 | „ 3 „ | 3 0 | 4 0 | 4 30 | 4 48 | |
| 5 | 8 41 | „ 4 „ | 3 40 | 4 30 | 5 0 | 6 0 | | 10 | 8 45 | „ 4 „ | 4 0 | 5 0 | 5 40 | 6 0 | |

Notes.—Lanterns, "Harvie" No. 22,592 (starboard) and No. 22,593 (port).
Both lights exhibited at the same time. The *Red* light appeared the brighter of the two, but the *Green* seemed more persistent, being visible to as great a crossing angle as the *Red*.
*Weather*, very fine clear starlight, no haze or moonlight.
When considered *Fair*, red light appeared equal to a good barge's red light in mid-river. The red light at its full power seemed equal to a large steamer's red oil light in mid-river.

May 6th, 1895.—Experiments with Colza Oil in Harvie Lantern, No. 22,592; double flat wick, fore and aft; width 44 mm. = $1\frac{3}{4}$″, breadth across wicks 28 mm. = $1\frac{1}{16}$″.

| GREEN. | | | | | | | | RED. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | | | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | |
| 1 | 9 37 | To 0° from inside | 0 30 | 1 15 | 1 40 | 3 30 | | 6 | 9 54 | To 0° from inside | 1 0 | 1 18 | 1 48 | 3 42 | |
| 2 | 9 44 | „ 1° „ | 1 47 | 2 12 | 2 34 | 4 8 | | 7 | 10 0 | „ 1° „ | 2 0 | 2 12 | 2 42 | 4 24 | |
| 3 | 9 30 | „ 2° „ | 2 54 | 3 19 | 3 42 | 5 25 | | 8 | 9 57 | „ 2° „ | 3 0 | 3 16 | 3 48 | 5 14 | |
| 4 | 9 34 | „ 2° from outside | 1 24 | 1 54 | 2 18 | 4 0 | Cut off at first very sudden. | 9 | 9 50 | „ 2° from outside | 1 19 | 1 53 | 2 36 | 4 0 | |
| 5 | 9 40 | „ 4° „ | 3 30 | 3 56 | 4 8 | 6 0 | | 10 | 10 3 | „ 4° „ | 3 36 | 4 0 | 4 20 | 6 0 | |

Notes.—The *Red* light at its best about equal to a coasting steamer's light abeam in mid-river, but it is not equal to the 16 c.p. electric light.
The sudden cut off of the colza light probably due to the double wick being fore and aft in the lantern.
The double wick subtends an angle of 1° 21′ at the slide. *Weather*.—Fine and clear, moonlight.

Anthony S. Thomson.

10th April 1895.—Mineral Oil Burners in Harvie Lanterns, Nos. 22,592 (Starboard) and 22,593 (Port). App. 10, No. 1

STARBOARD.

| No. of Experiment. | Time. P.M. | Screening. | Crossing Angles to which Light was observed to show. Full power to | Fair to | Dimly to | Practically disappeared at | Remarks. |
|---|---|---|---|---|---|---|---|
| | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | |
| 1 | 9 2 | To 0° from outside - | 0 30+ | 0 0 | 0 30 | 2 0 | Wick at right angles. |
| 2 | 9 7 | „ 1° „ - | 0 0 | 0 50 | 2 0 | 3 0 | „ „ |
| 3 | 9 9 | „ 2° „ - | 1 0 | 2 0 | 3 0 | 4 30 | „ „ |
| 4 | 9 16 | „ 3° „ - | 2 0 | 3 0 | 3 40 | 5 0 | „ „ |
| 5 | 9 12 | „ 4° „ - | 3 12 | 4 0 | 4 40 | 6 30 | „ „ |
| 6 | 9 20 | „ 0° from inside - | 0 18 | 1 0 | 2 0 | 3 0 | „ „ |
| 7 | 9 27 | „ 0° through centre - | 1 0+ | 0 48+ | 0 36+ | 1 0 | Wick fore and aft. Slide was opened 10 mm., should have been opened 15 mm. |

PORT.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | |
| 8 | 8 40 | To 0° from outside - | 0 0 | 0 24 | 1 0 | 1 40 | Wick at right angles. |
| 9 | 8 43 | „ 1° „ - | 0 30 | 0 50 | 1 30 | 2 0 | „ „ |
| 10 | 8 47 | „ 2° „ - | 1 42 | 2 0 | 2 30 | 3 0 | „ „ |
| 11 | 8 50 | „ 3° „ - | 2 30 | 3 0 | 3 30 | 4 0 | „ „ |
| 12 | 8 53 | „ 4° „ - | 3 30 | 3 50 | 4 30 | 5 0 | „ „ |
| 13 | 8 57 | „ 0° from inside - | 1 0 | 1 30 | 2 0 | 3 0 | „ „ |
| 14 | 9 0 | „ 0° through centre - | 0 0 | 1 24 | 2 0 | 2 30 | Wick fore and aft. Slide opened 10 mm. instead of 15 mm. |

Wick.—Double flat wick in a single burner; width of wick 30 mm. = $1\frac{3}{16}$″. Angle subtended by wick at slide 1° 27′. Lights shown separately.
Weather.—Clear, starlight, no moon, slight haze over the water.

6th May 1895.—Mineral Oil, Fish-globe Lantern. Maker's name not known.

PORT.

| No. of Experiment. | Time. P.M. | Screening. | Crossing Angles to which Light was observed to show. Full power to | Fair to | Dimly to | Practically disappeared at | Remarks. |
|---|---|---|---|---|---|---|---|
| | H. M. | | ° ′ | ° ′ | ° ′ | ° ′ | |
| 1 | 10 18 | To 0° from inside - | 0 54 | 1 12 | 1 42 | 3 14 | |
| 2 | 10 26 | „ 1° „ - | 1 24 | 2 0 | 2 42 | 4 45 | |
| 3 | 10 30 | „ 2° „ - | 2 20 | 3 0 | 3 30 | 5 30 | |
| 4 | 10 24 | „ 2° from outside - | 1 0 | 1 42 | 2 6 | 4 0 | |
| 5 | 10 28 | „ 3° „ - | 1 43 | 2 20 | 3 0 | 5 0 | |
| 6 | 10 21 | „ 4° „ - | 3 0 | 3 30 | 4 0 | 5 50 | |

Wick.—Single flat wick 28 mm. = $1\frac{1}{16}$″ wide, placed at right angles.
Angle subtended by wick at the slide = 1° 38′.
Light was a poor one compared with the "Harvie" colza.
Weather.—Fine and clear, moonlight.

Anthony S. Thomson.

No. 2.—Side Light Experiments at Silvertown to ascertain the Crossing Angle at which Electric Lamps of various Candle Powers are visible when screened to 0 degrees from outer edge of Filament, and viewed from a distance of 572 yards. Date, 20th May 1895. Lantern used, "Harvie," full size, dioptric, No. 22,593.

| Details of Lights as exhibited in the Lantern. | | | | | | | | | Appearance of the Lights viewed from a distance of 572 yards. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Crossing Angles to which the Light was observed to show. | | | | | |
| No. of Experiment. | Time. P.M. | Details of Incandescent Filaments. Shape. | Width. | Nominal c.p. | How placed. | Current volts. | Actual c.p. | Colour of Screen used. | Remarks. | Full power to | Fair to | Dimly to | Practically disappeared. | Remarks. | Weather. |
| | H. M. | | | | | | | | | ° ′ | ° ′ | ° ′ | ° ′ | | |
| 1 | 8 57 | Horseshoe | 34 mm. = 1·3″ | 200 | At right angles | 100 | | White | | 0 17+ | 2 0 | 4 0 | 7 0 | The first cut off of the light by the slide was very distinct. | Cloudy. A good deal of haze on the river, obscuring lights to some extent. No moon. |
| 2 | 9 5 | ,, | ,, | ,, | ,, | 106 | | Green | | 0 14+ | 0 12 | 2 0 | 6 0 | | |
| 3 | 9 11 | ,, | ,, | ,, | ,, | 104 | | Red | | 0 19+ | 0 20 | 2 12 | 6 0 | | |
| 6 | 9 25 | Horseshoe | 34 mm. = 1·3″ | 200 | Fore and aft | 106 | | White | | 0 7 | 3 0 | 7 0 | 8 50 | | |
| 5 | 9 21 | ,, | ,, | ,, | ,, | 106 | | Green | | 0 0 | 2 0 | Not taken | 7 12 | | Less haze. |
| 4 | 9 17 | ,, | ,, | ,, | ,, | 104 | | Red | | 0 0 | 1 0 | 3 30 | 7 0 | | |
| 7 | 9 31 | Curl | 34 mm. = 1·3″ | 100 | At right angles | 106 | | White | Very good steady light | 0 10 | 3 0 | 5 20 | 8 0 | Light nearly as good as the 200 c.p. | |
| 8 | 9 35 | ,, | ,, | ,, | ,, | 108 | | Green | ,, ,, | 0 7 | 1 0 | 3 0 | 6 0 | | |
| 9 | 9 38 | ,, | ,, | ,, | ,, | 106 | | Red | ,, ,, | 0 5 | 1 0 | 3 30 | 6 0 | | |
| 10 | 9 43 | Curl | 20 mm. = 0·8″ | 50 | At right angles | 106 | | White | Very good steady light | 0 5+ | 2 0 | Not taken | 6 0 | | A good deal of haze at times. |
| 11 | 9 45 | ,, | ,, | ,, | ,, | 105 | | Green | ,, ,, | 0 8+ | 0 0 | 1 0 | 3 18 | | |
| 12 | 9 48 | ,, | ,, | ,, | ,, | 105 | | Red | ,, ,, | 0 9+ | 0 12 | 2 0 | 3 20 | | |
| 13 | 9 52 | Curl | 18 mm. = 0·7″ | 32 | At right angles | 105 | | White | Very good steady light | 0 0 | 1 0 | 3 0 | 5 30 | | A good deal of haze at times. |
| 14 | 9 54 | ,, | ,, | ,, | ,, | 105 | | Green | ,, ,, | 0 0 | 0 8 | 1 0 | 3 0 | | |
| 15 | 9 57 | ,, | ,, | ,, | ,, | 105 | | Red | ,, ,, | 0 0 | 0 4 | 1 8 | 2 52 | | |
| 16 | 10 0 | Horseshoe | 17 mm. = 0·67″ | 16 | At right angles | 105 | | White | Very good steady light | 0 0 | 0 14 | 3 0 | 5 0 | | |
| 17 | 10 3 | ,, | ,, | ,, | ,, | 105 | | Green | ,, ,, | 0 0 | 0 5 | 0 24 | 2 0 | | Very hazy. |
| 18 | 10 6 | ,, | ,, | ,, | ,, | 105 | | Red | ,, ,, | 0 0 | 0 12 | 0 36 | 2 6 | | |
| 19 | 10 18 | Curl | 18 mm. | 32 | Right angles | 104 | | Green<br>Red | Red and Green shown simultaneously 4 feet apart. | 0 0<br>0 0 | 0 8<br>0 8 | Not taken | | Both lights cut off at the screening line; both appeared fair when viewed from the central line. | |

The + sign means that the light cut off before the screening line was reached.

Notes.—One lantern only used in all the experiments except the last, when the red and green lights were shown simultaneously from similar lanterns.

As the tangent to one degree for radius 572 is 10, one minute of arc = 6 ins. at the distance from which the lights were viewed.

The colza and mineral oil lamps supplied for use in these lanterns, when tested photometrically, were found about equal to a 16 candle power electric lamp.

Anthony S. Thomson.

960'
180'
Capt. Wilson Barker's Exp.
Screened to inner edge
of wick in fore & aft
line. 1' wick.
Common Lamps.
Scale. 500'.
100'
500'
6080'
121° 42'
111°

## APPENDIX No. 11.

App. 11.

*Paper handed in by Captain Wilson Barker.*

REPORT of EXPERIMENTS with SIDE LIGHTS.

A series of experiments were conducted with common lamps without any special refinements, except that the point right in the fore and aft line between the lamps —to which imaginary line the screens were parallel— was most carefully determined, and it is considered that any errors are within + or — 10 feet, allowing a liberal estimate.

The lamps were those fitted without chimneys, and burning paraffin. The shells were galvanised, and the "lenses" or fronts were of plain stained fish-globe glass. The wicks were single and 1 in. in breadth. The lamps were arranged in screens on a platform back to back, the space between their backs being 7 inches.

The screens were regulation size, and cut off screens were formed of block tin. The base of the screen was carefully marked out with the angles, and every care taken that the cut off was absolutely accurate.

The lamps were carefully trimmed and set by myself, and experiments conducted after they had been alight and in position about half-an-hour.

A good pair of binoculars were used for sighting.

The wicks were placed at right angles to the fore and aft line. No masthead light was used, and no other lights were about to distract the attention.

Both nights were fine and cloudy, and would be considered medium seeing nights.

The distance from the lights to centre of line where observations were taken was 3,560 feet.

While on the ground observing a great difference could be observed between the behaviour of the lights (although the flames inside were as nearly similar as possible), the red seemed to glow all over as a red ball, the green not at all; the light in the green lamp even at this distance forming almost a point of light. Up to the last glimmer the red light could be seen as red, not so with the green, as at a certain point while still being visible it lost its greenness, and might be described as a dirty white light, and an observer would possibly think it was the light from the binnacle. The points observed to are those where colour ceased to be visible to the glasses.

It is very striking how much more across the bow the red light is visible on the green side than the green is on the red side. The Table shows this clearly.

It might be expected from this that more collisions would arise from altering the course to starboard, as the present law requires, than if the law required the course to be altered to port. The diagram* clearly shows this, and its explanation.

TABLE illustrating the RANGE of the RED and GREEN LIGHTS on fore and aft LINE.

+ Means that it extended over the 10 points the amount given.

— Means that it was less than the 10 points by amount given.

Thus at + the red light was 640 feet past the fore and aft line while the green was only 60 feet.

| How screened. | | Outer Edge of Wick. | | Inner Edge of Wick. | |
|---|---|---|---|---|---|
| | | Red. | Green. | Red. | Green. |
| | | Feet. | Feet. | Feet. | Feet. |
| 1. Screened in line parallel to keel or fore and aft line | | +480 | −140 | +560 | −100 |
| 2. Screened so that angle between wick and fore and aft line of keel was | 1° | +540 | −90 | +720 over | −20 |
| 3. Ditto | 2° | +640 | +60 | „ | |
| 4. Ditto | 3° | +700 and over. | +110 | „ | |
| 5. Ditto | 4° | „ | +120 | „ | .85 |

30th June 1895. D. WILSON BARKER.

## APPENDIX No. 12.

App. 12.

REPORT of FURTHER EXPERIMENTS with SHIPS' LIGHTS, carried out at SHOEBURYNESS, for SIDE LIGHTS COMMITTEE, on July 25th and 26th, 1895.

*Lamps used.*—The lanthorns were the same as those used by the Committee in their previous series of experiments on June 12th to 14th, 1895, and described in the Report dated June 18th, 1895.* On this occasion, however, they were fitted, in addition to the oil burners, with electric incandescent lamps of 50, 32, and 16 candle power. The distance of the outside edge of the filament from the side of the lanthorn, and the angle made by the filament with the back of the lanthorn, compared with the position of the outside edge of wick and the angle of wick in the oil lamps.

The B pattern of lanthorn, having a clear lens and a coloured shade, were used to test two tints of green shade, which will be distinguished in this report as light and dark shades respectively.

*General Arrangements.*—Were practically the same as described in report dated June 18th, 1895, except that the masthead light was now raised to a height of 45 ft. above the side lights. The committee viewed the lights from distances of 5,000 yds., 2,000 yds., and 500 yds.

*General Remarks.*—The observations on this occasion were made with a large number of variables, including distance from lights, angle of screening, nature of lamps, whether oil or electric, the candle power of each respective lamp, and in the case of the starboard lanthorn, different tints of green shade.

In consequence of this, it is difficult to tabulate the results, but, for convenience of reporting, the observations have been divided into series according to their nature as below. The observations of :—

*Series* I.—Refer to the relative values of the respective lights when seen from certain points at which the observations were taken.

Those of *Series* II. refer to the distances each side of the centre line at which the lights were seen full, and also finally disappeared.

Those of *Series* III. refer to continuous observations taken while driving down the centre line towards the lights.

Those of *Series* IV. were special, having reference to the observations reported as doubtful in the report dated June 18th, 1895.

The figures and distances given are, with one or two exceptions, those judged by the Committee.

Although classified as above, the order of the various observations has been preserved in this report as some of the remarks made are based upon the experience of more than one observation, sometimes of different natures.

*Atmospheric Conditions.*—The weather was favourable, nights fairly dark and clear, sky overcast to clear, the former predominating. Nore Light, Mouse Light, and lights in channel plainly visible on both nights. No moon.

* *See* Appendix 9.

* Plate XXIV.

App. 12.

*Observations taken on July 25th, 1895.*

*Series* I.—Relative value of lights.

(a.) *Point of Observation.*—On centre line of ship at 5,000 yards from lights.

*Nature of Light shown.*—Side lanthorns B pattern, with electric lamps, 16 candle power.

Masthead lamp at 45 ft. above side lights, oil lamp.

*How screened.*—Four degrees from outside of wick.

It was observed that the light green shade in the starboard lanthorn gave a more luminous light at this distance than the dark green shade.

*Valuation of Brightness of Lamps.*—Taking the masthead lamp (oil) as value 10 the side lights with 16 c.p. incandescent lamps were valued :—

| | |
|---|---|
| Port - - - | 10 |
| Starboard (dark green) - | 7 |

With 32 c.p. incandescent lamps :—

| | |
|---|---|
| Port - - - | 14 |
| Starboard (dark green) - | 9 |

With 50 c.p. incandescent lamps (observed from same spot but screened to 0 degrees inside of wick), the values were judged :—

| | |
|---|---|
| Port - - - | 16 |
| Starboard (light shade) | 11 |

Both were lamps of good colour, luminous and unmistakeable :—

| | |
|---|---|
| Starboard (dark shade) - | 9 |

It was noted that the masthead light should not be too strong compared with the others, as too strong a masthead light tends to apparently dim the side lights.

*Series* II.—The Committee also took observations as to the distances, on each side of the centre line, the side lights with different candle powers showed full power and ceased to be visible, respectively, at this distance, and also at 2,000 yds. The results of these observations will be found in table A.

*Series* I.—continued. *Point of Observation.* On centre line of ship at 2,000 yds. from the lights.

*Nature of Side Lights shown.*—B.lanthorns (light-green shade, in starboard lanthorn) 16 c.p. electric lights.

*How screened.*—0 degress inside of wick. Values adjudged :—

| | |
|---|---|
| Masthead - - | 10 |
| Port - - - - | 9 |
| Starboard - - | 7 or 8 |

Oil lamps now substituted for the electric, all other conditions the same.

Values adjudged.

| | |
|---|---|
| Masthead - - | 10 |
| Port - - - - | 8 |
| Starboard - - | 6 |

The Committee, after noting the appearance of the lamps at this distance with candle powers of 32, 50 and 16 respectively, and having previously observed these candle powers from distances of 5,000 yds., remarked that :—(1.) The 32 c.p. lamps seemed to give a good and sufficient light. (2.) The 50 c.p. is not so markedly superior to the 32 c.p. as to render the difference of great importance, but it appeared to them that 50 c.p. should not be exceeded. (3.) The 16 c.p. lamps were markedly inferior to the 32 c.p. lamps.

*Series* III.—With the B lanthorns with oil lamps, and screened to 0 degrees inside of wick, the Committee drove down the centre line from 2,000 yds. direct to the lamps, and saw that both lights were visible the whole distance until the foot of the beach was reached, about 65 yds. from the lamps.

*Observations taken on July 26th, 1895.*

*Series* IV.—With the A lamps (oil) screened to 0 degrees inside of wick and viewed from the centre line at 4,000 yards from the lights, the Committee judged that both lights showed practically their full power on the centre line.

*Series* II. (resumed). B lanthorns electric 16 c.p. incandescent lamps, screened to 4 degrees outside of wick, and observed at 4,000 yards.

For results *see* table A.

The Committee noted that the electric lamps seemed a great improvement over the oil.

The light green shade was unfortunately broken accidentally. The broken shade was used for a short time, then as rays of white light got through the cracks a shade of "standard" green, which was nearly a match, was tried, and used for one observation, but found unsatisfactory as it did not fit the lamp and allowed of the escape of some white rays round its edge.

Observations were therefore continued with the dark green shade.

The observations made with the broken and ill-fitting shade are marked in Table A.

*Series* I.—*Relative values of lamps* (resumed).

*Point of Observation.*—On centre line of ship at 4,000 yds.

*Nature of Light shown.*—B lanthorns electric 16 c.p. lamps. Dark-green shade in starboard lanthorn. Masthead light, oil.

*How screened.*—0 degrees inside of wick.

Values adjudged :—

| | |
|---|---|
| Masthead - - | 10 |
| Port - - - | 8 |
| Starboard - - | 3 |

Starboard lamp changed to 32 c.p.

Value increased to 7.

The masthead now changed to electric 16 c.p. The Committee considered this lamp superior to the oil one, while it did not sensibly diminish the brightness of the green and red. They value the masthead lamp now at 12.

The three lamps thus stood as follows :—

Masthead 16 c.p., value 12.
Port 16 c.p., value 8.
Starboard 32 c.p., value 7.

A 50 c.p. lamp was now substituted in the starboard lanthorn, the value of which was again adjudged to be 7.*

The masthead was now raised to 32 c.p. and the Committee were of opinion that the effect of the brighter masthead light was to apparently dim the green and red to a material degree.

*Series* II. (resumed). At 500 yds.

*Lights.*—Masthead electric 16 c.p. :—
Port electric 16 c.p.
Starboard electric 50 c.p.

*How screened.*—0 degrees inside of wick.

For results *see* table A.

*Series* III.—With the lights as above, the Committee drove down the centre line from 500 yds. direct on to the lamps, and, as on the previous occasion, found that both lights were visible all the way until the foot of the beach was reached.

The distance from the lights on the centre line, at which both lights ceased to be visible, was found to be 55 yds.

*Diagrams.*—Four diagrams† are enclosed based on the figures in the report.

Fred Elmslie.
Major, R.A.
Asst. Supt. of Experiments.

Shoeburyness,
July 31st, 1895.

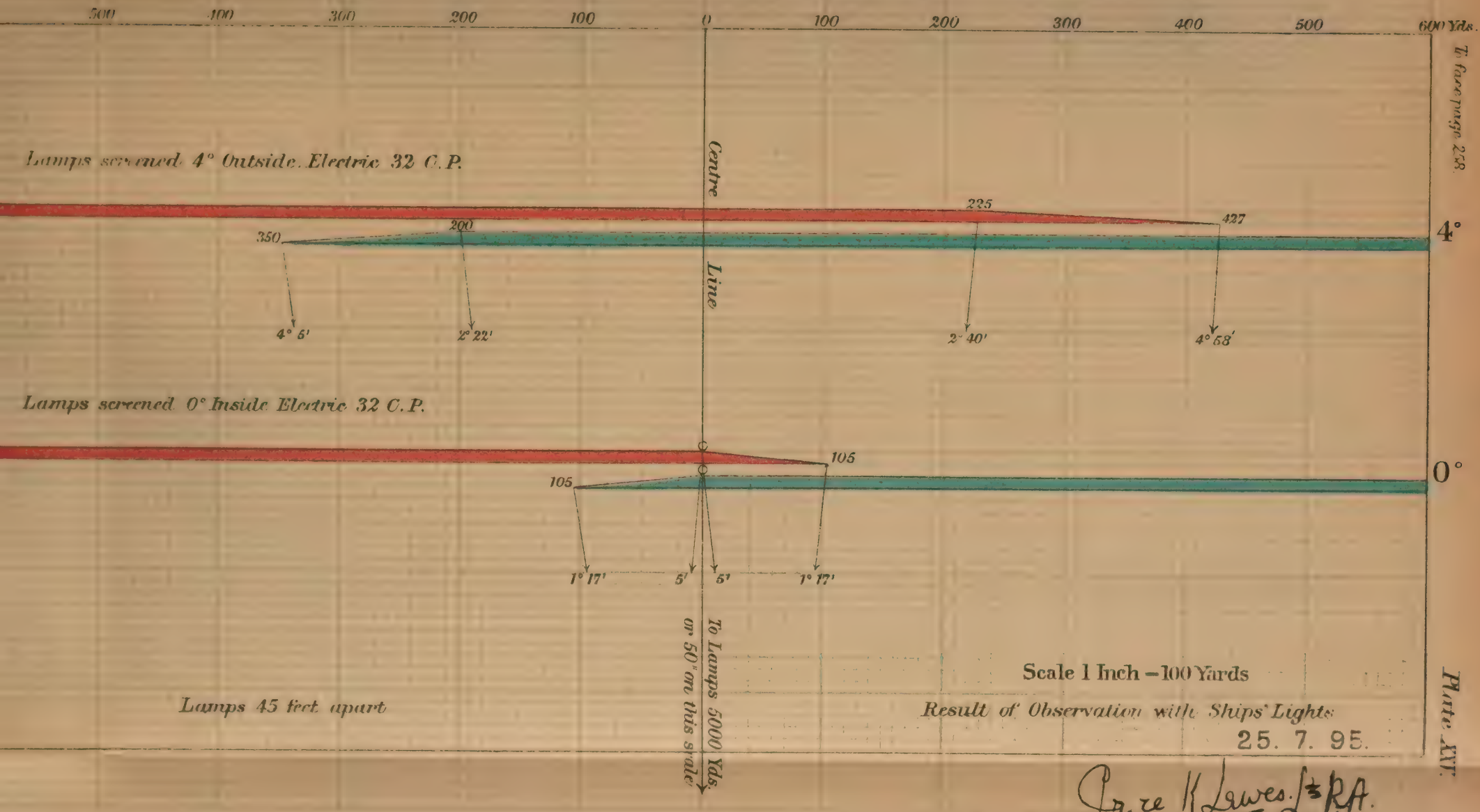
* It is singular that in the case of this lanthorn with this shade, the same value has twice been allotted to the 50 c.p. lamp as to the 32 c.p. *See* observations made on July 25, 1895. Series I.

† Plates XXV., XXVI., XXVII., and XXVIII.

Note by Mr. Bolam, a Member of the Committee, as to the Hygrometric Condition of the Atmosphere during the above Experiments.

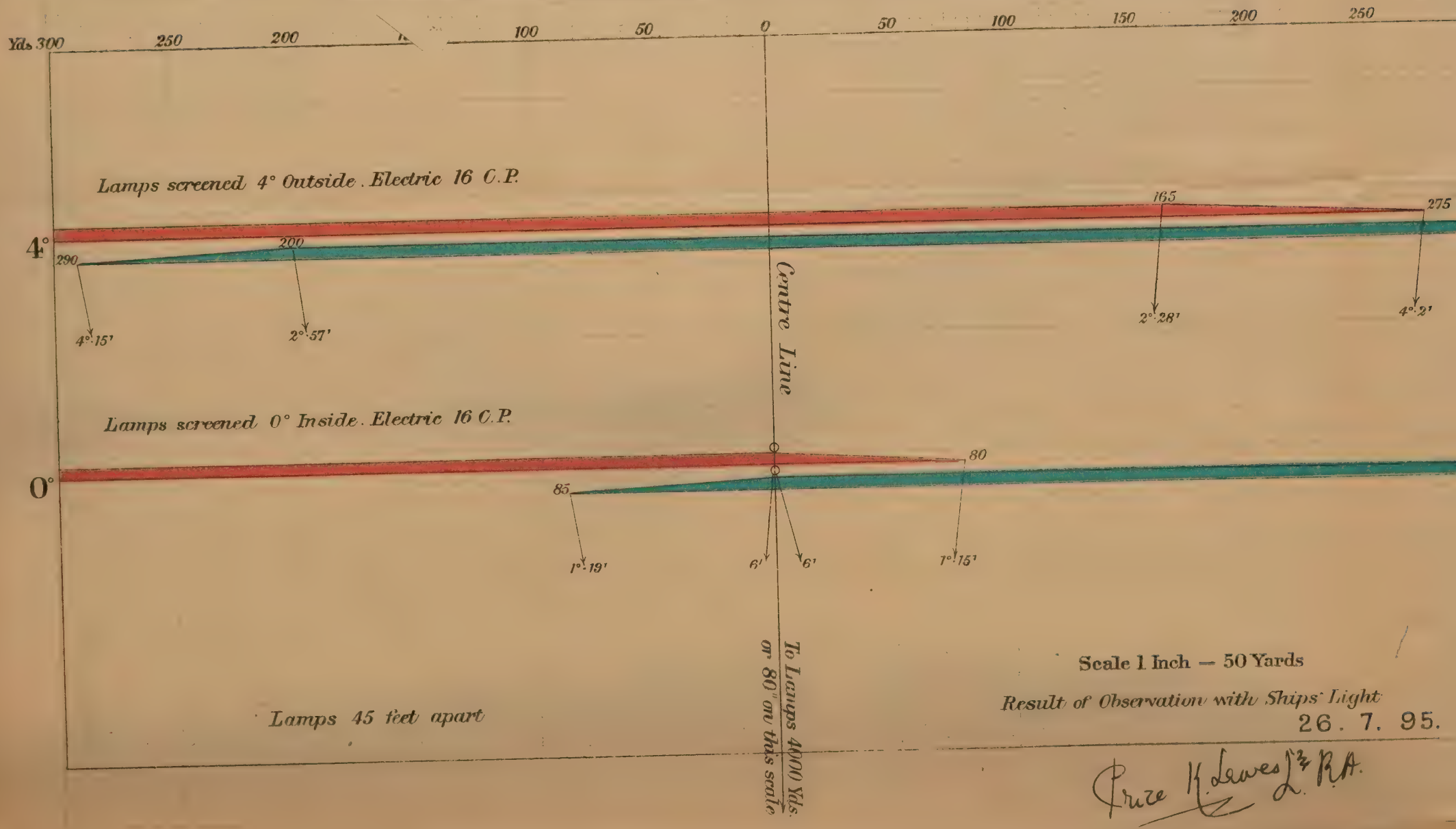
| Commenced. | Ended. | Relative Humidity (100 = Saturation). Two Readings. | Mean. |
|---|---|---|---|
| 25th July, evening - | 26th July, morning | 87 and 92 | 89·5 |
| 26th July „ - | 27th July, „ | 92 and 93 | 92·5 |
| | | 2 | 182·0 |
| Mean for electric lamp experiments - - | | | 91·0 |

# OBSERVATIONS TAKEN AT 5000 YARDS GRAPHICALLY REPRESENTED.




Frere K. Lewes. Lt. R.A.

# Observations taken at 4000 Yards Graphically represented.

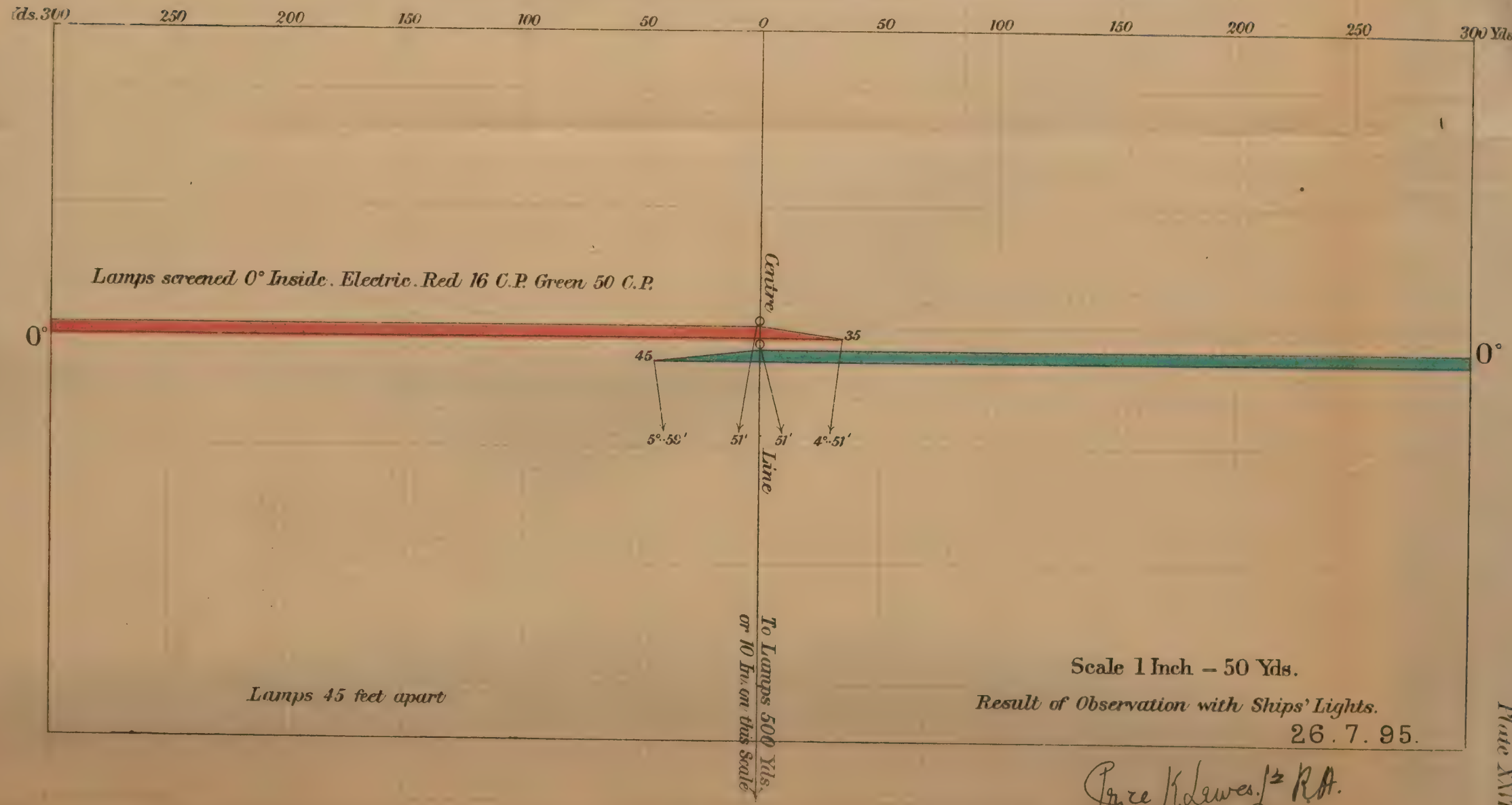


# Observations taken at 2000 Yards Graphically represented.

Price K. Lewes. Lt R.A.

Price Plate XXVII.

# Observation taken at 500 Yards Graphically represented.




Pierce K. Lewes. Lt RA.

Plate XXVIII.

## TABLE A.

App. 12.

Experiments carried out at Shoeburyness on July 25th and 26th, 1895.

| Observation. | Nature of Light. | Screening. | At 5,000 Yards. 25/7/95. | At 4,000 Yards. 26/7/95. | At 2,000 Yards. 25/7/95. | At 500 Yards. 26/7/95. | — |
|---|---|---|---|---|---|---|---|
| B. Lamps. | | Degrees. | Yards. | Yards. | Yards. | Yards. | |
| Distance on port side :— | | | | | | | |
| Green seen full | Electric light, 32 candle power | | 200 | — | 123 | — | |
| Do. disappears | | | 350 | — | 200 | — | |
| Distance on starboard side :— | | | | | | | |
| Red seen full | | | 225 | — | 130 | — | |
| Do. disappears | | 4° outside wick. | 427 | — | 210 | — | |
| Distance on port side :— | | | | | | | |
| Green seen full | Electric, 16 candle power | | — | 200 | — | — | Light-green shade in pieces. |
| Do. disappears | | | — | 290 | — | — | |
| Distance on starboard side :— | | | | | | | |
| Red seen full | | | — | 165 | — | — | |
| Do. disappears | | | — | 275 | — | — | |
| Distance on port side:— | | | | | | | |
| Green seen full | Electric, 32 candle power | | On centre line. | — | On centre line. | — | |
| Do. disappears | | | 105 | — | 140 | — | |
| Distance on starboard side:— | | | | | | | |
| Red seen full | | | On centre line. | — | On centre line. | — | |
| Do. disappears | | | 105 | — | 140 | — | |
| Distance on port side:— | | | | | | | |
| Green seen full | Electric, 16 candle power | 0° inside wick. | — | On centre line. | — | — | Standard green slide not a proper fit. |
| Do. disappears | | | — | 85 | — | — | |
| Distance on starboard side:— | | | | | | | |
| Red seen full | | | — | On centre line. | — | On centre line. | |
| Do. disappears | | | — | 75 to 85 | — | 35 | |
| Distance on port side:— | | | | | | | |
| Green seen full | Electric, 50 candle power | | — | — | — | On centre line. | Rays can be seen shooting out from lens when latter no longer visible. |
| Do. disappears | | | — | — | — | 45 | |

Fred. Elmslie, Major R.A.,
Asst. Supt. of Experiments.

## APPENDIX No. 13.

App. 13, No. 1.

*Papers handed in by Sir D. Murray.*

No. 1.—Experiments made in 1892 to determine the effect of Electric Light on the colour of the Green Glass.

In consequence of the representations of the Russian Naval Attaché as to the effect of the electric light on the green side light of the Russian Imperial yacht, I promised to thoroughly investigate the subject.

I requested Mr. Samson to make some initial inquiries and experiments, and as these latter appeared to show that the electric light did, to a certain extent, neutralise the colour of the green slide or lens (as the case may be), I determined to thoroughly experiment with a view to ascertaining definitely the effect of the electric light of different degrees of intensity on the green glass.

Hearing that Sir Donald Currie & Co. applied electric light of very considerable candle power to their side lights, I wrote to that firm requesting that they would give Mr. Samson facilities for inspecting their lights, and it is owing to their kindness and courtesy and the able assistance rendered by the [illegible] that it has been possible at once to arrive at a solution of this question.

The Board of Trade [illegible] standard side lights, together with the standard green [illegible] as approved by the Admiralty and the Board of Trade, to Sir Donald Currie's office at Billiter-walk, and at 5 p.m. on Wednesday, November 2nd, the trials took place before Captain Rogestvensky, the Naval Attaché to the Imperial Russian Embassy, Mr. Samson, and myself, and were of the most conclusive character.

The lamps tried were three in number, viz.:—

(1.) An electric side light, manufactured by Messrs. Chance Brothers, of Birmingham, having a green slide of a different colour and deeper tint than the darkest shade of the two Board of Trade standard colours.

(2.) An electric side light, having a green slide of the same tint as the darker of the two Board of Trade standard colours.

(3.) The Board of Trade standard oil lamp, having a green slide of the same tint as the lighter of the two Board of Trade standard colours. I was anxious to replace this slide with one of the darker tint, but no spare slides would suit the particular lamp, and as our experiments subsequently showed this was not material.

It was raining during the time the experiments were being carried out, but this did not at all affect the comparisons between the three green lights, although it considerably affected the colour of the white mast-head light, giving it a reddish tinge.

Apr. 13, Nos. 1 and 2.

The electric side light of Messrs. Chance showed a good colour throughout the whole of the experiments; though the green slide of this lamp was of a deeper colour than the darkest of the Board of Trade standard tints there was only a very slight perceptible difference between its colour when lighted by electricity and the colour of the oil lamp which had a slide of the lightest of the Board of Trade tints.

The conclusions Mr. Samson and I have arrived at are as follows:—

In the case of electric side lights neither of the standard greens are dark enough, and the colour should either be determined by experiment, in which case the colour of the side light at the particular candle power it is intended to use should not show lighter than that of a full-sized oil lamp fitted with the lightest of the two standard tints of green, or the shade of colour which Messrs. Chance have, in consultation with Sir Donald Currie & Co., manufactured for this particular lamp on board the "Roslin Castle" should be adopted.

We think it desirable that a number of slips of glass of this colour should be obtained from Messrs. Chance for the information of the Board's officers, and through them of the shipowning public, and that a cautionary circular should be sent out to the surveyors to the following effect:—

"It having come to the knowledge of the Board of Trade that the two standard green tints adopted by them for oil lamps are not applicable to electric side lights, surveyors are informed as follows:—

"In the case of electric side lights neither of the standard tints of green are dark enough, and the colour should either be determined by experiment, in which case the side light should not show of a lighter colour than that of a full-sized oil lamp fitted with the lightest of the two standard tints of green glass, or the shade of colour which Messrs. Chance have adopted in consultation with Sir Donald Currie & Co. in the starboard side light of the 'Roslin Castle' should be adopted.

"Samples of these glasses are forwarded herewith, and surveyors should make this information as public as possible."

We append a table showing the experiments.

| Description of Light. Starboard Electric Side Light with a specially dark-tinted Slide, by Messrs. Chance Brothers. | Description of Light. Starboard Electric Side Light with a Slide of the darker Tint of the two Board of Trade Standards. | Description of Light. Board of Trade Standard Starboard Side Light, burning Mineral Oil with a Slide of the lighter Tint of the two Board of Trade Standards. |
|---|---|---|
| Candle power. | | |
| 16.—Good colour | Pale in colour - | Very good colour. |
| 32.— „ - | Too pale in colour | — |
| 50.— „ - | „ „ | — |
| 100.— „ - | Not tried. | — |
| 200.— „ - | „ | — |

All the electric lights were incandescent lights.

As compared with the oil lamp fitted with the light-green slide, the electric light fitted with a slide corresponding to the darker standard green was too pale, and with 32 and 50 candle power was nearly white.

Messrs. Chance's light, though fitted with a specially dark slide, showed only just a shade darker colour than the oil lamp. The difference in candle power did not seem to further effect its colour, *i.e.*, its colour with 200 candle power was as good as with only 16 candle power.

DIGBY MURRAY.
PETER SAMSON.

No. 2.—GENERAL CONCLUSIONS as to the SCREENING of SIDE LIGHTS.

1. That lights ought to converge to as large an angle as may be consistent with safety, and that this angle should not be less than 4° and as far as practicable uniform in all ships.

2. It matters but little in rivers or narrow channels whether the vessels navigating up and down the channel have side lights at all, or, if they have, to what angle they may be screened, but it is very material in the case of small vessels which are crossing the channel backwards and forwards.

3. If it is considered unsafe for vessels navigating rivers and narrow inland waters to have their lights screened to the same angle as at sea, this may be readily provided for by placing the lamps back to back at the stem of the ship, with a screen between them regulated to any angle which may be thought desirable and of sufficient length to prevent the lights from blending, a position in which they could not, of course, be carried at sea. I do not, however, consider this necessary.

4. As the condition of the atmosphere, the encrustation of salt on the lenses, the vertical position of the flame with reference to the ship's heel, the colour of the glass, and whether the lens itself is coloured or whether the colour is produced by coloured slides will all have an appreciable effect on the angle at which the light will be visible from the middle line, it would on these accounts be undesirable to screen the lights to too fine an angle. Let me put the fine angle of screening hypothetically, and suppose that it is determined to screen the lights to an angle of 2° measured from the outer edge of the wick.

Those in favour of this angle of screening would probably be of opinion either that the regulations should be added to, or that there should be an implied instruction to the following effect:—

Steamships sighting a red light fine on their port bow should, unless it is rapidly changing its bearing, port to it.

Steamships sighting a green light fine on their starboard bow should, unless it is rapidly changing its bearing, starboard to it.

Hypothetically it is safe to port to a red light on the port bow, and to starboard to a green light on the starboard bow. Whether in the case of lights being screened to an angle of 2° this latter would be safe in practice is a point for consideration.

It is impossible for the surveyor to screen lights on board ship with absolute mechanical accuracy, and to solve the foregoing problem it will be necessary to consider the method adopted to obtain the required angle of convergence, and also the limits of error both inwards and outwards from that angle.

The usual way of fitting the screens parallel to the keel is as follows:—

A line is stretched between the centre of two masts where these are available, and then a wood batten is squared across from this line, both on the port and starboard side, to the fore and after sides of the screens.

If two masts, or a mast and funnel are not available, a measurement is taken of the entire width of the ship in the required position, and the middle line struck from this and wood battens used as before.

If either of these methods is intelligently carried out the limit of error may be about ½° each way, that is to say, if it is required to screen lights to, say, 2°, they may in one ship be screened to 2½° and in another to 1½°, though in both supposed to be screened to 2°.

Supposing A.* to be the vessel having her lights screened to 1½° and B. to be the vessel having her lights screened to 2½°.

Then A. in the position shown in the diagram sees both the side lights of B. and ports.

B. sees only the green light of A. and starboards.

The lamps are usually clamped to the screens, they have frequently a little play, and sometimes are not quite parallel to the screen, but the error from this cause is probably merely nominal.

If wood screens are fitted they are liable to warp and in one case brought under my notice to an extent of 1 inch in a length of 42 inches—equal to an alteration in the screening of about 1° 21′ 45″.

When the side lights are carried on stanchions or davits the screening is very liable to get deranged by ropes fouling them, their coming in contact with dock sides or receiving blows from a sea, and this to a very considerable extent.

The foregoing are reasons for not screening lights too finely as it is evident that although nominally screened to any particular angle it by no means follows that this is accurately the case.

I am extremely anxious to understate and not to overstate my case, and, although in practice a considerable error may arise, I shall confine myself to the ½° of error each way which the present methods admit of, even when intelligently carried out, and this is equivalent to an error of about $\frac{3}{16}$ of an inch, more accurately

* Plate XXIX.

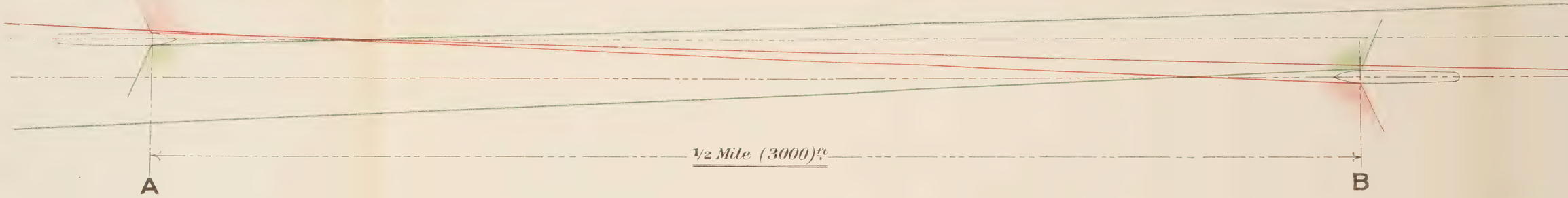
*Scale of Feet.*

LIGHTS SCREENED TO $1\frac{1}{2}^{o}$

DISTANCE BETWEEN LIGHTS $30^{ft}$

LIGHTS SCREENED TO $2\frac{1}{2}^{o}$

DISTANCE BETWEEN LIGHTS $30^{ft}$



*½ Mile (3000)ft*

A

B

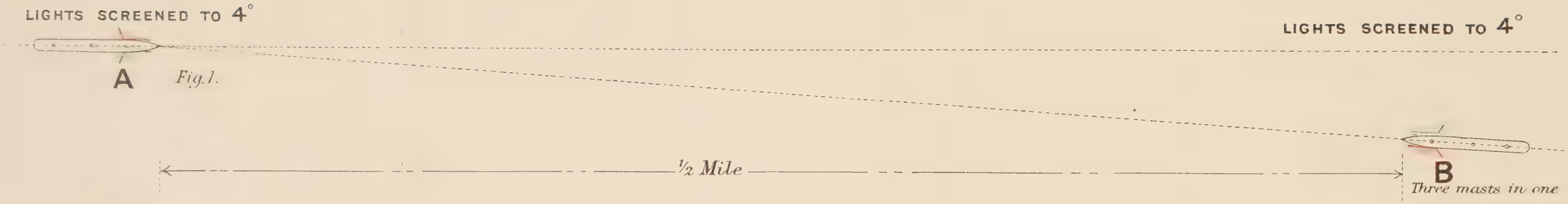



*Fig. 1.*

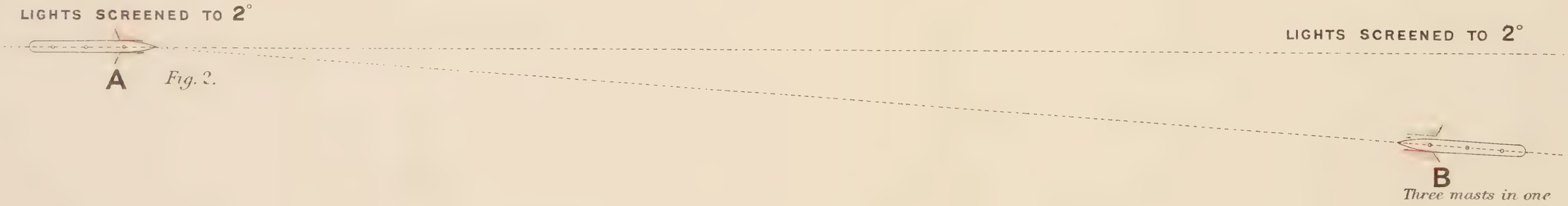



*Fig. 2.*

*Scale of Feet.*

·314 in measuring the distance from the middle line. *See* diagram, which I think abundantly proves that it is not necessarily safe to starboard to a green light fine on the starboard bow. I think in such a position the only safe course is for both ships to port. In addition to the liability to error from the causes previously alluded to, large angles of permanent heel, often met with in the case of timber laden and grain laden ships, may produce a further error of ½° or over in consequence of the flame always remaining vertical although the lamp is inclined.

If the lights are to be screened to a smaller angle than 4°, then, in my opinion, there should be international agreement, and even then I think it would be fraught with danger.

At one time I thought lamps ought to be screened to as small an angle as possible consistent with the full volume of light being visible at a reasonable distance ahead of the ships. Further investigation has altered my views, and, if I was perfectly autocratic in the matter, I should increase the angle to 4½°.

5. At the time of our experiments Mr. Samson and I were of opinion that the red light might be screened to 3° and the green light to 4°,* and we then discussed the question as to whether it was desirable to screen the two lights to two different angles, and the conclusion we arrived at was that it was on the whole preferable to screen them alike. It does not, I think, matter greatly to what angle the lights of large passenger steamships are screened, their speed will enable those in charge of the deck to give all other vessels a reasonably wide berth, but it is of the utmost importance to the commanders, and indirectly to the owners of these large steamships, that the slower and smaller class of vessels should be efficiently lighted and, as far as practicable, uniformly screened.

The exact angle to which side lights should be screened will always be a matter of opinion, but to form a fairly correct judgment it will be necessary to determine in the first place what is nearly end on and to screen the lights in such a manner that there shall be no doubt when ships are in these relative positions.

In the second place to determine the angle of screening necessary to enable the full volume of light to be seen ahead of the vessel, so that in foggy, hazy, or thick weather the rays of light may penetrate as far as possible.

* *See* Report of the experiments at the Glengall Iron Works. Appendix 2, No. 5.

The outcry against the action of the Board of Trade has been for the most part the outcome of misapprehension, and the result of critics assuming to themselves a knowledge which they did not possess. No master of a ship and no pilot has, from the mere nature of his calling, a knowledge on this particular subject, and it is impossible for either one or the other to argue accurately from an assumed knowledge of the screening of particular ships with reference to which they have no precise information. My own knowledge on the subject, was, when I joined the Board of Trade in 1873, of a very limited description, and what little I know has been acquired since, and the only fear I now have is that I, and the members of the Board of Trade staff, who together with myself have given evidence, have inadequately conveyed to the minds of the Committee all the endless phases of this most complex and difficult subject.

App. 13, Nos. 2 and 3.

D. Murray,
May 17, 1895.

No. 3.—Memorandum on Ships Meeting nearly end on at Night.

The conditions of steamships approaching one another, end on or nearly end on, by day and those applicable by night are widely different.

In figures 1 and 2,* when the vessels are approaching one another by day, their directions would be known, and they would probably both port, so as to give one another a sufficiently wide berth. It might be held that the vessels marked A. should get out of the way of the vessels marked B., but I think it admits of argument that B. is not a crossing vessel on A.'s starboard *side*.

In figure 1, supposing the two vessels to be approaching one another by night, and their side lights to be screened to an angle of 4°, their directions would not be known to one another, but both would port. In figure 2, supposing the lights to be screened to an angle of 2°, A. would see both the side lights of B., and would port. B. would only see the green light of A., and would probably starboard. This, in my opinion, shows the absolute necessity of determining what is nearly end on, before coming to any definite conclusion as to the exact angle of screening.

* Plate XXX.

## APPENDIX No 14.

App. 14, No. 1.

*Papers handed in by Staff-Captain Phillips.*

1.—Table giving particulars of the Screening of some of H.M. Ships.

| Ship. | Fore and Aft Screen. How placed. | Length between Forepart of Lamp and end of Screen, or Chock (if any). | Description of Chock (if any) on Fore and Aft Screen. | Length of After Screen, and where placed relative to Lamp. | Description of Underneath Screen (if any). | Position where the Side Lights are fitted. | Remarks. |
|---|---|---|---|---|---|---|---|
| | | Ft. Ins. | | | | | |
| Revenge | Steel. Inside the glass. | 3 1½ | Nil | 14 in. After side of glass. | A steel strip, 4 in. broad. | On the side of lower bridge. | The (after) thwartship screen angles afterwards at about 15°. |
| Royal Oak | Steel. Inside the lamps. | 4 4 | Wood, 4 in. deep. | 12 in. After side of lamp. | No | Side of lower bridge. | The after screen angles afterwards at about 15°. |
| Gibraltar | Steel. Inside the glass. | 3 1 | Nil | 12 in. After side of glass. | No | Side of fore bridge. | The after screen angles afterwards at about 20°. |
| Fox | Steel. In line with edge of glass. | 3 2 | Nil | Steel, 7½ in. After side of lamp. | Yes, tapering off forward to 2 in. | Side of fore bridge. | Both the screens are quite plain. This fitting seems simple and good. This screen is adjustable and could be moved out 2 in. further. |
| Narad | Steel. Inside the glass. | 2 10 | Wood, ½ in. | Steel, 10 in. After side of lamp. | Yes, tapering off to 3 in. | Fore side of bridge. | Nearly the whole screen can be turned back on a hinge. It is kept in place by a stout (hook) stay at back. |
| Intrepid | Steel. In line with edge of glass. | 3 | Nil | Steel, 10 in. After side of lamp. | No | Fore side of bridge before [illegible] | The fore and aft screen hinges about the middle, so that foremost half can be turned back. The [illegible] narrow. |
| Indefatigable | Steel. In line with edge of glass. | 3 3 | Nil | Steel, 10 in. After side of lamp. | No | Fore side of bridge. | The fore and aft screen hinges about the middle. This plan is objectionable, as the screen may be left turned back and so lead to disaster. |

App. 14. Nos. 1 and 3.

1.—Table giving Particulars of the Screening of some of H.M. Ships—*continued.*

| Ship. | Fore and Aft Screen. How placed. | Length between Forepart of Lamp and end of Screen, or Chock (if any). | Description of Chock (if any) on Fore and Aft Screen. | Length of After Screen, and where placed relative to Lamp. | Description of Underneath Screen (if any). | Position where the Side Lights are fitted. | Remarks. |
|---|---|---|---|---|---|---|---|
| | | Ft. Ins. | | | | | |
| Latona | Steel. In line with edge of glass. | 3 0 | Steel angle piece, 1 in. | Steel, 7 in. After side of lamp. | Yes, tapering forward to 2 in. | Forepart of fore bridge. | Screen with hinge and stay can turn in from about its centre. |
| Narcissus | Steel. In line with edge of glass. | 2 11 | Nil | Nil | No | On the side of lower bridge. | From a light box built out clear of side. |
| Hercules | Inside the lamp. | 2 6 | Steel, 4½ in. | Steel, 4 in. After side of glass. | No | On the bluff of bow, before cathead. | Fitted to a wood chock, lined with iron. |
| Nelson | Steel. Inside the lamp. | 3 1 | Wood, 4½ in. | 9 in. After side of lamp. | No | Side of fore bridge. | |
| Melpomene | Steel. In line with edge of glass. | 3 0 | Nil | Steel, 10 in. After side of lamp. | No | *Before* the outer edge of bridge. | The leadsman is on the *end* of bridge which is quite narrow. |
| Pallas | Steel. Inside the edge of glass. | 3 0 | Steel, 1 in. | Steel, 9 in. Abaft lamp. | No | *Under* the edge of fore bridge. | |
| Calliope | The ship's side lined with iron in line with edge of glass. | 3 0 | Nil | Steel, 3 in. In line with edge of glass. | No | Before the cat davit. | Quite in the bows. The side lights are very close together for the size of ship. |
| Daring | Steel. Inside the lamp. | 2 7 | Steel angle piece, 7 in. | Steel, 9 in. After side of lamp. | No | On the side of bow gun platform. | Some of this class have the bow lights fitted on side of funnel. |
| Swiftsure | Steel. In line with edge of glass. | 3 0 | Nil | Steel, 12 in. After side of lamp. | No | Fore corner of upper battery. | |
| Iron Duke | — | — | — | — | Yes, part of solid chock. | Side of upper deck battery. | Built out in a solid wood chock, with its side forming the fore and aft screen. |
| Invincible | — | — | — | — | Yes, part of solid chock. | Side of upper deck battery. | Built out in a solid wood chock, with its side forming the fore and aft screen. |
| Achilles | — | — | — | — | Yes, part of solid chock. | Side of ship over cathead. | Fitted against side of ship in a solid wood chock, with its side forming the fore and aft screen. |
| Neptune | — | — | — | — | — | Under bower anchor. | Built into side of forecastle. |
| Imperieuse | — | — | — | — | — | Corner of mess deck. | Lamp box built into the corner of mess deck, with short iron screen on the after side. |

No. 2.—Table giving Distance between the Lights on some of H.M. Ships, and the Distance from the Lights to the Stem.

| Ship's Name. | Transverse Distance between Bow Lights. | Distance of Stem from Transverse Line. | Remarks. |
|---|---|---|---|
| | Feet. | Feet. | |
| Royal Oak | 60 | 122⅓ | |
| Gibraltar | 46½ | 95 | |
| Fox | 39 | 80 | |
| Pallas | 35 | 75 | |
| Torpedo Gunboat | 25 | 67 | |
| Torpedo Boat Destroyer. | 9½ | 37 | Fitted on funnels. |
| Sultan | 39½ | 14 | |
| Neptune | 37 | 30 | |
| Calliope | 22 | 13 | |

No. 3.—Admiralty Rule as to Screening.

The screens ahead should be so fitted that an observer approaching the ship from right ahead would see the full rays from both lights up to a point from 200 to 150 yards before the stem; between which point and the ship the lights should appear dim, gradually disappearing as the bow of the ship is approached.

The smaller distance of 150 yards is preferable for ships with small beam, or ships with small transverse distance between the lights, and the greater of 200 yards for ships with greater distance between the lights.

The lights should be tried in place to see if the before-mentioned conditions are fulfilled, and, if not, the necessary alterations to the fittings should be made.

# APPENDIX No. 15.

App 15, Nos. 1 and

*Papers handed in by Staff Commander Edwards.*

No. 1.—Table giving distance between the Lights on some of H.M. Ships, and the distance from the Lights to the Stem.

| Name of Ship. | Distance between Lights. | | Distance of Lights from Stem. | |
|---|---|---|---|---|
| | Ft. | Ins. | Ft. | Ins. |
| Spider | 12 | 6 | 51 | 4 |
| Astrea | 39 | 3 | 80 | 6 |
| Hussar | 23 | 3 | 68 | 3 |
| Lynx | 11 | 7 | 36 | 0 |
| Amphion | 33 | 10½ | 53 | 0 |
| Devastation | 30 | 0 | 97 | 0 |
| Rupert | 32 | 9 | 133 | 6 |
| Curaçoa | 16 | 3 | 22 | 3 |
| Pearl | 30 | 9 | 74 | 7 |
| Warspite | 35 | 0 | 36 | 0 |
| Téméraire | 51 | 7½ | 88 | 2 |
| Belleisle | 49 | 0 | 108 | 8 |
| Agamemnon | 23 | 7 | 138 | 0 |
| Northumberland | 45 | 6 | 27 | 0 |
| Triumph | 56 | 3 | 127 | 0 |
| Antelope | 20 | 6 | 68 | 9 |
| Shannon | 48 | 6 | 70 | 0 |
| Rainbow | 33 | 10 | 76 | 5 |
| Thames | 34 | 6 | 87 | 6 |
| Curlew | 24 | 3 | 67 | 1 |
| Bellerophon | 37 | 4 | 40 | 6 |
| Raleigh | 30 | 9 | 33 | 0 |

No. 2.—Table showing Angle of Convergence and Width of Base with different distances between the Lights.

| Distance between Lights. | Angle of Convergence at 150 yards from Base. | Angle of Convergence at 200 yards from Base. | Distance of crossing point from base with 4° Screening. Fathoms. | Base at 2 miles. Fathoms. | Base when Convergence is 4° Fathoms. |
|---|---|---|---|---|---|
| Feet. | ° ′ | ° ′ | | Crossing at 150 yards. | Crossing at 150 yards. |
| 12 | 0 46 | 0 34 | 14·3 | 51·34 | 269·2 |
| | | | | Crossing at 200 yards. | Crossing at 200 yards. |
| 24 | 1 32 | 1 9 | 28·6 | 76·00 | 265·8 |
| 36 | 2 17 | 1 36 | 42·9 | 114·00 | |
| 48 | 3 3 | 2 18 | 57·2 | 152·00 | |
| 60 | 3 49 | 2 52 | 71·5 | 190·00 | |
| 72 | 4 34 | 3 26 | 85·8 | 228·00 | |

Wicks 4″ deep × 1¼″ wide. Height of wick from base of lamp 6½ inches.

# APPENDIX No. 16.

App. 16.

*Paper handed in by Mr. Taylor.*

Board of Trade Office, Greenock,
18th January 1895.

Sir,

With reference to your letter of the 11th instant to Mr. Rowley re-screening of side lights in old vessels, I beg to submit the accompanying table, giving the actual results obtained by me during the year 1893, in 100 vessels, as taken from my private note books in consecutive order, and which consequently can be fully substantiated. In the case of each vessel I ascertained from the master or chief officer that the screens had not been previously dealt with by any other surveyor under Board's Minute 2,220 of 1893; therefore, I am quite sure that the subjoined table gives the actual angles of convergence in the light screens of 100 vessels taken indiscriminately, and I think it may be taken as a good example of the general condition of vessels' light screens previous to the present regulations coming into force.

In each case I inquired of the master or officer in charge of the vessel whether the side lights converged, and it is a remarkable fact that 94 per cent. of them were under the impression that the rays of light showed ahead in lines parallel to the centre line of the vessel, although they had been sailing vessels for years with side lights in many instances converging much in excess of what is required by the present regulations.

I remain, &c.
T. D. Taylor,
Shipwright Surveyor.

Principal Officer,
Glasgow.

List of 100 Vessels whose Light Screens were Inspected during 1893.

| Name of Vessel. | Port and Official Number. | Tonnage. Gross. | Tonnage. Net. | Steam or Sailing. | Date of Survey. | Convergence of Side Lights. Port. | Convergence of Side Lights. Starb. | Convergence when Screens are Parallel. Port. | Convergence when Screens are Parallel. Starb. | Length of Screens from Wick to Chock. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ° | ° | ° | ° | ′ |
| Jura | Liverpool; 70,981 | 1,285 | 1,157 | Sail | 17.1.93 | 7 | 6½ | 7 | 6½ | 50 |
| Charles and Ellen | Chester; 76,890 | 158 | 138 | ,, | ,, | 5¼ | 1 | 3½ | 3½ | 41 |
| Clymene | London; 81,557 | 1,463 | 942 | Steam | 18.1.93 | 3 | 3 | 2½ | 3 | 53 |
| Livornese | Liverpool; 65,769 | 1,437 | 931 | ,, | 19.1.93 | ⅓ | 4 | ½ | 4 | 43 |
| Perseverence | Preston; 81,236 | 98 | 78 | Sail | 20.1.93 | 4 | 4 | 4 | 4 | 46 |
| Swift | Maryport; 99,556 | 149 | 62 | Steam | 23.1.93 | 4½ | 4½ | 3½ | 3½ | 40 |
| Swan | Liverpool; 56,061 | 708 | 427 | ,, | ,, | 4 | 5¼ | 5¼ | 5¼ | 50 |
| Bostonian | Liverpool; 93,797 | 4,668 | 3,030 | ,, | ,, | 1¼ | 1½ | 1¼ | 1½ | 48 |
| Highland Mary | London; 98,952 | 2,989 | 1,949 | ,, | 24.1.93 | 4½ | 5¼ | 4¼ | 4½ | 45 |
| Princess Sofia | Glasgow; 98,681 | 502 | 198 | ,, | ,, | 2 | 2 | 2 | 2 | 41 |
| Croxden | Waterford; 86,004 | 504 | 292 | ,, | ,, | 3½ | 4½ | 4¾ | 5½ | 42 |
| Ionmore | Liverpool; 87,844 | 1,721 | 1,118 | ,, | 1.2.93 | 6 | 2 | — | 2 | 64 |
| Arcadia | Barrow; 17,874 | 289 | 152 | ,, | 1.2.93 | ¼ | ½ | | ½ | 36 |
| Lord Londonderry | Belfast; 93,176 | 2,409 | 1,566 | ,, | 1.2.93 | 1 | 1 | 1+ | 1 | 43 |
| Baroscourt | Liverpool; 81,348 | 1,518 | 981 | ,, | ,, | 3½ | 3 | 3½ | 3 | 48 |
| Helades | Liverpool; 91,254 | 2,965 | 1,922 | ,, | 31.1.93 | 2½ | 3½ | 2½ | 3 | 64 |
| Ardennant | London; 87,081 | 1,063 | 669 | ,, | 1.2.93 | 3½ | 3½ | 3½ | 3½ | 41 |
| Andalusian | Liverpool; 76,538 | 1,733 | 1,136 | ,, | 2.2.93 | 1½ | 2½ | 1½ | 2½ | 36 |
| Phocaean | Liverpool; 84,042 | 2,080 | 1,361 | ,, | ,, | 3 | 1 | + | 2 | 43 |
| Dartmore | Liverpool; 84,147 | 1,609 | 1,039 | ,, | ,, | 3½ | 2½ | 3½ | 2½ | 63 |
| Sicily | Liverpool; 76,395 | 1,689 | 1,062 | ,, | 13.2.93 | 5 | 4¼ | 5 | 4½ | 40 |

APP. 16.

| Name of Vessel. | Port and Official Number. | Tonnage. Gross. | Tonnage. Net. | Steam or Sailing. | Date of Survey. | Convergence of Side Lights. Port. | Convergence of Side Lights. Starb. | Convergence when Screens are Parallel. Port. | Convergence when Screens are Parallel. Starb. | Length of Screens from Wick to Chock. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ° | ° | ° | ° | " |
| St. Enoch | Liverpool; 97,844 | 4,298 | 2,746 | Steam | 13.2.93 | 5 | 4⅜ | 5 | 4⅜ | 40 |
| Zio Battista | Truro, N.S.; 92,713 | 700 | 679 | Sail | 14.2.93 | 4 | 3½ | 4 | 3½ | 45 |
| Sutherland | Liverpool; 55,016 | 926 | 589 | Steam | 16.2.93 | 3¼ | 4 | 3¼ | 4 | 49 |
| Annie E. Wright | Dorchester; 79,916 | 1,899 | 1,763 | Sail | 20.2.93 | 6¼ | 4¾ | 6¼ | 6 | 41 |
| Parkmore | Liverpool; 97,829 | 3,318 | 2,136 | Steam | ,, | 3½ | 3½ | 3½ | 3½ | 48 |
| Ravenswood | Workington; 63,890 | 1,123 | 1,089 | Sail | 22.2.93 | 4½ | 4½ | 4½ | 4½ | 45 |
| Herbert | Liverpool; 84,149 | 165 | 90 | Steam | 9.3.93 | 7½ | 6 | 7½ | 6 | 37 |
| Lapland | Leith; 65,778 | 1,297 | 823 | ,, | ,, | 3½ | 3½ | 3½ | 3½ | 45 |
| Zancla | Liverpool; 65,920 | 1,089 | 706 | ,, | 3.2.93 | 2½ | 3½ | 3½ | 3½ | 44 |
| Gulf of Lions | Greenock; 93,228 | 2,662 | 1,672 | ,, | 5.12.92 | 4 | 4 | 4 | 4 | 50 |
| Quillota | Liverpool; 74,483 | 728 | 696 | Sail | 15.12.92 | 3 | 3 | 3 | 3 | 48 |
| Crofton Hall | Liverpool; 87,835 | 2,123 | 2,040 | ,, | ,, | 4 | 4 | 4 | 4 | 46 |
| Sierra Parina | Liverpool; 86,212 | 1,584 | 1,480 | ,, | ,, | 3¼ | 3¼ | 3¼ | 3¼ | 53 |
| Sierra Colonna | Liverpool; 78,785 | 1,499 | 1,397 | ,, | ,, | 3 | — | 3 | — | 64 |
| Roby | Liverpool; 93,715 | 2,293 | 2,118 | ,, | ,, | 3½ | 3½ | 3½ | 3½ | 47 |
| Glencairn | W. Hartlepool; 95,898 | 1,136 | 731 | Steam | 21.12.92 | 4 | 4 | 4 | 4 | 55 |
| Ulrica | Greenock; 87,399 | 1,972 | 1,923 | Sail | 23.12.92 | 4 | 4 | 4 | 4 | 48 |
| City of Madras | Glasgow; 86,728 | 1,655 | 1,577 | ,, | ,, | 3 | 3 | 3 | 3 | 49 |
| Mooltan | Liverpool; 81,370 | 1,725 | 1,616 | ,, | 2.1.93 | 3½ | 3½ | 3½ | 3½ | 63 |
| Larinca | Windsor, N.S.; 78,982 | 1,472 | 1,403 | ,, | ,, | 6½ | 8 | 5½ | 5½ | 53 |
| Ant | Glasgow; 87,710 | 1,133 | 710 | Steam | ,, | 3½ | 3½ | 3¼ | 3¼ | 50 |
| Adelaide Mary | Liverpool; 55,018 | 603 | 572 | Sail | ,, | 5¼ | 6¼ | 6¼ | 6¼ | 46 |
| Meath | Sunderland; 81,457 | 2,295 | 1,458 | Steam | ,, | 4 | 4 | 4 | 4 | 33 |
| Mannington | Liverpool; | — | — | ,, | ,, | 6¼ | 6 | 6¼ | 6 | 42 |
| Tinto | Liverpool; 95,082 | 2,144 | 2,067 | Sail | 3.1.93 | 2½ | 4 | 2 | 3¼ | 44 |
| Walney | Whitehaven; 74,757 | 238 | 85 | Steam | ,, | 4 | 2½ | 4 | 2 | 49 |
| Dollie | Liverpool; 87,952 | 389 | 161 | ,, | ,, | 4 | 4 | 4 | 4 | 47 |
| York | Whitby; 86,646 | 3,290 | 2,112 | ,, | ,, | 4¾ | 5 | 4¾ | 5 | 46 |
| Editor | Liverpool; 91,243 | 1,701 | 1,057 | ,, | 6.1.93 | 4¼ | 3½ | 4¼ | 4½ | 36 |
| Ptarmigan | London; 98,908 | 780 | 475 | ,, | ,, | 3 | 3 | 3 | 3 | 46 |
| Achievement | Liverpool; 60,042 | 504 | 499 | Sail | 9.1.93 | 7 | 5¼ | 3½ | 3½ | 42 |
| Prince Ja Ja | Liverpool; 97,802 | 294 | 145 | Steam | ,, | 3¾ | 3 | 3¾ | 4 | 44 |
| Telephone | Liverpool; 68,289 | 162 | 75 | ,, | 11.1.93 | 5¼ | 4¼ | 5½ | 5 | 38 |
| Isabelle | Liverpool; 99,333 | 609 | 345 | ,, | ,, | 3½ | 3 | 3¾ | 3 | 48 |
| British General | Liverpool; 69,366 | 1,810 | 1,754 | Sail | 13.1.93 | 3 | 1¼ | 3¾ | 3¾ | 48 |
| Bandeeth | Liverpool; 84,194 | 724 | 670 | ,, | ,, | 3 | 4 | 3¾ | 3¾ | 43 |
| Oxenholme | Liverpool; 84,105 | 2,721 | 1,756 | Steam | 16.1.93 | 2 | 2 | 3½ | 3½ | 40 |
| Venetian | Liverpool; 86,214 | 4,055 | 2,672 | ,, | ,, | 1½ | 5¼ | 4 | 4 | 38 |
| Lady Bessie | Carnarvon; 84,639 | 183 | 79 | ,, | 17.1.93 | 5¾ | 4¾ | 5¾ | 5¾ | 42 |
| Vale of Nith | Liverpool; 63,257 | 697 | 672 | Sail | 14.3.93 | 4¼ | 3¾ | 4¼ | 4 | 55 |
| Frogmore | Liverpool; 81,383 | 1,547 | 1,000 | Steam | 15.3.93 | 4¼ | 3½ | 4¼ | 3½ | 47 |
| Delambre | Liverpool; 69,331 | 1,308 | 812 | ,, | 17.3.93 | 2½ | 2½ | 2½ | 2½ | 47 |
| Fabian ? | Liverpool; 84,156 | 2,197 | 1,444 | ,, | 25.3.93 | 6½ | 6½ | 6½ | 6½ | 43 |
| R. A. Caldron | Liverpool; 87,890 | 840 | 750 | Sail | 27.3.93 | ¼ | 2 | ¼ | 0 | 48 |
| Drumcraig | Liverpool; 91,178 | 1,979 | 1,851 | ,, | 7.4.93 | ½ | 4¾ | — | — | 51 |
| Claribel | Charlottetown; 74,174 | 449 | 427 | ,, | 12.4.93 | 5 | 11 | 5¼ | 7 | 27 |
| Flaminian | Liverpool; 84,042 | 2,080 | 1,361 | Steam | 18.4.93 | 2¾ | 3½ | 3¼ | 3¼ | 43 |
| Alsatian | Liverpool; 76,490 | 1,732 | 1,133 | ,, | 4.5.93 | 2 | 1½ | 2 | 1½ | 45 |
| Enterprise | Dublin; 16,441 | — | 39 | Sail | ,, | 8 | 9 | 9 | 10 | 36 |
| Prince Oscar | Liverpool; 51,403 | 1,292 | 1,292 | ,, | 12.5.93 | 7½ | 7½ | 7 | 7 | 46 |
| Lalla Rookh | Liverpool; 74,542 | 841 | 814 | ,, | 13.5.93 | 4 | 4 | 4 | 4 | 44 |
| Persian | Liverpool; 45,944 | 2,144 | 1,396 | Steam | 15.5.93 | 2¾ | 3¾ | 2¾ | 3¾ | 37 |
| Flavian | Liverpool; 81,375 | 2,091 | 1,364 | ,, | ,, | 3 | 3 | 3 | 3 | 45 |
| Favonian | Liverpool; 84,138 | 2,200 | 1,445 | ,, | 20.5.93 | 2½ | 2½ | 2½ | 2½ | — |
| Fabian ? | Liverpool; | — | — | ,, | 2.6.93 | ½ | ½ | ½ | ½ | 44 |
| Tenasserim | Glasgow; 71,701 | 2,802 | 1,804 | ,, | 5.6.93 | 5 | 5 | 5 | 5 | 44 |
| Aleppo | Glasgow; 50,370 | 2,181 | 1,399 | ,, | 13.6.93 | ½ | 2½ | 3¾ | 4¼ | 43 |
| Falernian | Liverpool; 84,062 | 2,208 | 1,453 | ,, | 21.6.93 | 2 | 2 | 2 | 2 | 43 |
| Georgian | Liverpool; 97,816 | 5,088 | 3,318 | ,, | ,, | 4 | 4 | 4 | 4 | 36 |
| Elbe | London; 87,074 | 774 | 492 | Sail | 26.6.93 | 5 | 4½ | 5 | 4½ | 48 |
| Algerian | Liverpool; 76,402 | 1,728 | 1,131 | Steam | 30.6.93 | 1½ | ½ | 2½ | 1¼ | 43 |
| Canopus | Liverpool; 63,338 | 2,793 | 1,794 | ,, | 28.6.93 | 4½ | 4½ | 4½ | 4½ | 46 |
| Hellopes | Liverpool; 96,308 | 2,774 | 1,797 | ,, | 20.7.93 | ¾ | ¾ | ½ | ¾ | 51 |
| Kansas | Liverpool; 86,170 | 5,276 | 3,455 | ,, | 21.7.93 | 1 | ½ | 1 | ½ | 49 |
| Parkmore | Liverpool; 97,829 | 3,318 | 2,136 | ,, | 24.7.93 | 3½ | 3⅝ | 3½ | 3½ | 48 |
| Shieldrake | Cork; 92,001 | 1,080 | 606 | ,, | 3.8.93 | 1¼ | 1¼ | 1¼ | 1¼ | 51 |
| Heathmore | Liverpool; 86,293 | 1,864 | 1,218 | ,, | 5.8.93 | 5¼ | 3 | 4½ | 5 | 42 |
| William Gordon | Chatham, N.B.; 72,096 | 756 | 732 | Sail | ,, | 7¾ | 7¾ | 7½ | 7½ | 45 |
| Eldorado | London; 93,081 | 1,382 | 828 | Steam | 8.8.93 | 2½ | 2½ | 2½ | 2½ | 45 |
| Hereford | London; 60,978 | 1,524 | 1,469 | Sail | 9.8.93 | 5¼ | 5 | 4⅝ | 4 | 51 |
| Sedgmore | Liverpool; 97,885 | 4,332 | 2,810 | Steam | 14.8.93 | 4 | 4 | 4 | 4 | 44 |
| Baltimore | Liverpool; 91,142 | 3,730 | 2,459 | ,, | 7.9.93 | 4 | 4 | 4 | 4 | 37 |
| Osmanli | Liverpool; 81,382 | 2,283 | 1,451 | ,, | 9.10.93 | 4 | 4 | 4 | 4 | 45 |
| Rowan | Glasgow; 86,697 | 1,089 | 661 | ,, | 10.10.93 | 3½ | 4 | 3½ | 2 | 37 |
| Strathallan | Glasgow; 97,664 | 2,336 | 1,489 | ,, | 11.10.93 | 4½ | 4½ | 4½ | 4½ | 36 |
| Craigisla | Liverpool; 93,664 | 1,086 | 989 | Sail | 18.10.93 | 4½ | 4½ | 4½ | 4½ | 50 |
| Palestine | Liverpool; 21,385 | 2,867 | 2,128 | Steam | ,, | 7½ | 8 | 7½ | 8 | 51 |
| Archdale | Liverpool; 97,886 | — | 1,479 | Sail | 28.11.93 | 6½ | 6½ | 6¼ | 6¼ | 44 |
| Glynwood | Liverpool; 73,992 | 323 | 314 | ,, | 1.12.93 | 8¼ | 8¼ | 4¼ | 4 | 42 |

Greenock, August 5, 1895.

T. D. TAYLOR,
Shipwright Surveyor.

Actual angles of convergence as per list—
From 0° to 3½° = 49 per cent.
,, 4° to 58½° = 51 ,,
Between 3° and 5° = 61 ,,

Angles of convergence supposing screens had been parallel—
From 0° to 3½° = 48 per cent.
,, 4° to 9° = 52 ,,
Between 3° and 5° = 67 ,,

# APPENDIX No. 17.

App. 17, Nos. 1 and 3.

*Papers handed in by the Chairman.*

No. 1.—Letter from the Shipmasters' Society.

60, Fenchurch Street, London, E.C.
7th August 1895.

Sir,

The Committee of the Shipmasters' Society beg leave to place the following suggestions before the Departmental Committee on side lights, and respectfully to ask for its consideration of them, for the purpose of introducing uniformity of practice, as far as that is possible; and with a view to action being taken thereon, in the form of recommendation or otherwise, as may seem expedient to the Committee.

*Ships' Signal Lights and the placing of them.*

That the masthead and side lamps and lanterns in all vessels should be of uniform types mechanically—that, taking into account the illuminants used, the lenses of side lanterns should be of uniform tints, and the lights of uniform power.

That all steamers should carry their masthead and side lights placed to form isosceles triangles of fixed proportions, having angles of about 65° at the base and 50° at the apex; in other words, the masthead lights above the side lights, at heights in fixed proportion to the beam.

That all steamers should carry their side lights *either* abaft the masthead lights at a fixed angle with the perpendicular; or, the three lights *in* a vertical plane, or the side lights before the masthead lights, at a fixed angle with the perpendicular.

That the deck and cabin lights of electrically lit steamers, should be screened on the fore side and abeam to prevent the flood of white light from swamping the colour of the side lights.

Under existing regulations there is no limit to the height above the decks at which the side lights may be carried.—By order of the Committee,

A. G. Froud, Secretary.

The Secretary, Side Lights Committee.

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No. 2.—Letter from the Merchant Service Guild.

22, Canning Place, Liverpool,
May 1895.

Sir,

I am directed to inform you that the Guild have, after most careful consideration, come to the following conclusions on this matter, and beg respectfully to submit them to your Committee as being those of purely representative captains and officers of the Merchant Service, upon whom alone devolves the duty and responsibility of carrying out the rules of the road at sea:—

With regard to the Order in Council relating to the screening of side lights, dated 30th March 1893, the Guild are of opinion that a great deal of the agitation against it has been caused by a superficial and theoretical knowledge only of the subject, and while in no way approving of the action of the Board of Trade in this matter, they feel that the Order in Council referred to has not in any way interfered with the practical working of vessels at sea. They would, however, unhesitatingly state that, practically speaking, there is no "dark lane" in the sense as meant, and that therefore the Board of Trade had no cause in harassing British shipping by enforcing needless expense upon the shipowners. They also believe that the squinting side lights, as at present in force in this country, would place British captains and officers at a serious disadvantage in any collision inquiry before a foreign tribunal.

While considering this matter it has been thought that much more important points might be included in the deliberations of the Committee, viz.: the position, colour, &c., of the side lights, and they would humbly offer the following suggestions:—

(*a.*) That the side lights should be uniformly placed in all vessels. The Guild would recommend that in the case of steamers the side lights should be placed as far abaft the mast head light as that light is above the plane of the side lights, and in sailing ships they should be so fixed as not to be in any way obscured by the clews of the foresail.

(*b.*) That standard shades of glass should be adopted for the side lights. Great difficulty is often met with in "picking up" a green light, owing to the shade of glass used being in many cases very light and in close resemblance to a bright light. For a standard shade of green the Guild would recommend that in use on the East Goodwin light ship.

(*c.*) In accordance with Article 1, in which it is stated that "no other lights which may be mistaken for the prescribed lights shall be exhibited," the Guild would point out that in frequent cases the visibility of the side lights is much depreciated by the brilliancy of other lights placed in their vicinity, and another cause of unnecessary confusion is the shading over of lighted ports with red or green curtains.

In conclusion I am to state that the above points being of vital importance to the profession at large, the Guild earnestly hope that mention may be made of them in the report of the Committee.

I have, &c.

T. W. Moore,
Assistant Secretary.

The Chairman,
Side Lights Committee.

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No. 3.—Further Letter from the Merchant Service Guild.

22, Canning Place, Liverpool,
19th June 1895.

Sir,

With reference to your Secretary's letter of the 30th ult., I am directed to state the Guild can only esteem it as a favour that they should be invited to address a further communication to you on this subject, and gladly avail themselves of the opportunity.

Whilst adhering to and confirming their previously expressed opinions as to the advisability or otherwise of the change which has been made in the mode of screening, the Guild think that the chief and most serious question which has now to be considered is, as to what will be the position of a British ship in case of collision under any circumstances with a foreigner. In such a case there can be no doubt whatever, but that every advantage will be taken by the latter of the fact, that the British ships' lights are not fixed in accordance with the practice of any other nation. The result will undoubtedly be endless litigation, and eventual injury to British shipping and the interests of the captains and officers.

They would, therefore, most respectfully suggest—

That the regulations as to screening and fixing of ships' side lights be made *international*, or,

That the Order in Council, of the 30th Jan. 1893, be rescinded, and the *status quo ante* re-established.

Further, I am desired to state they consider it of the utmost importance that the mode of carrying out the international rules of the road at sea should be absolutely uniform, especially with regard to fixing the lights, and they trust that your Committee may be pleased to take a favourable view of their representations.

I have, &c.

W. Moore,
Assistant Secretary.

The Chairman, Side Lights Committee.

App. 18.

# APPENDIX No. 18.

*Papers handed in by the Chairman.*

CORRESPONDENCE as to the ANGLE of SCREENING prior to 1892.

Side Lights Committee, Board of Trade,
18th May 1895.

I AM desired by the Committee on the Screening of Ships' Side Lights to ask whether you would be good enough to furnish them with information as to the manner in which your steamships were screened prior to the issue of the instructions requiring all vessels to be screened to 4°.

The points upon which the Committee would be glad to have returns are—

1. In what ships were the screens altered in consequence of the new instructions?
2. In which of these ships were the chocks cut down?
3. In which were the chocks deepened?

You will, I am sure, recognise that it is important that the information should be as accurate as possible.

I am, &c.
C. HIPWOOD,
Secretary.

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Thos. Wilson, Sons & Co., Limited, Hull,
SIR, 21st May 1895.

IN reply to your letter of the 18th instant, respecting the screening of our steamers' side lights, we beg to inform you that all our steamers' side screens, prior to the issue of instructions requiring all vessels to be screened to 4°, were placed in a line with the ship's keel, in accordance with the Board of Trade rules.

The following steamers' screens have been altered by the Board of Trade in consequence of the new instructions:—

| | | |
|---|---|---|
| "Como" | "Montebello" | Chocks cut down ½ inch to ¾ inch. |
| "Domino" | "Plato" | |
| "Eldorado" | "Rollo" | |
| "Fido" | "Romeo" | |
| "Gozo" | "Tasso" | |
| "Hidalgo" | "Juno" | |
| "Milo" | | |

The under-mentioned have had their chocks deepened ½ inch to ¾ inch:—

"Argo" "Colorado."

Yours, &c.
JAMES RUTTER,
Marine Superintendent.

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"Allan" Line and "State" Line of Steamers,
25, Bothwell Street, Glasgow,
DEAR SIR, 25th May 1895.

WITH reference to your circular letter of the 18th instant, prior to the issue of the Board of Trade regulations in 1892, our steamers were aimed at being screened in a parallel line with the keel, and when the new regulations came into force the screens of every steamer in the Line had to be altered with the exception of two.

As regards the alteration of the chocks, we are sorry we cannot give you the information you require, as our superintendent did not keep a note of the details of the alterations; all that he concerned himself with being to see that the necessary alterations were made to make the lights conform to the new rules. Our impression, however, is that in most of the ships the chocks would be cut down, but not deepened.

Yours, &c.
JAMES and ALEXANDER ALLAN,
per J. Smith Park.

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British India Steam Navigation Company, Limited,
9, Throgmorton Avenue, London, E.C.,
SIR, 25th May 1895.

I HAVE the honour to acknowledge receipt of your letter of the 18th instant, and to inform you in reply that the following vessels belonging to the company have had their side-light screens altered in London in consequence of the new instructions, viz., "Africa," "Dunera," "Ethiopia," "Goorkha," "Golconda," "Java," "Manora," "Mecca," "Madura," and "Rewa."

In every case the chocks were cut down, and in no case were they deepened.

The other vessels owned by the company are trading on the coast of India, and I have no information on this point regarding them, but if you desire it I shall be glad to write to the managing agents of the company in India for the information.

I am, &c.
R. W. ARMOUR,
Joint Secretary.

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Peninsular and Oriental Steam
Navigation Company,
122, Leadenhall Street,
London, E.C.,
SIR, 28th May 1895.

IN reply to your circular letter of the 18th instant, I am desired to enclose a diagram for your information, showing that 60 per cent. of the side lights in this company's steamers have been altered, 40 per cent. so as to bring the rays of the lights out as per AA, and 20 per cent. to bring the rays in or nearer to each other, as per CC. BB is the true 4 degrees angle.

I am, &c.
A. TAIT, Secretary.

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The Cunard Steamship Company, Limited,
Liverpool, 29th May 1895.

SIR,

I BEG to enclose, for the information of the Committee, a list of the Cunard Company's steamers, the screens of which have been altered at the demand of the surveyors to the Board of Trade, and also a list of those of the company's steamers the screens of which have always been, and still remain, parallel to the middle line; the tracings show how, in a few of the vessels, the alterations were made, and if the Committee desire tracings showing how the screens were altered in some of the other vessels, the company will be glad to forward them.

I am, &c.
WM. WATSON,
General Superintendent.

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LIST of the CUNARD COMPANY'S steamers, the Screens of which are parallel to the Middle Line.

| | |
|---|---|
| "Samaria." | "Morocco." |
| "Atlas." | "Trinidad." |
| "Marathon." | "Palmyra." |
| "Tarifa." | "Cherbourg." |
| "Kedar." | "British Queen." |

WM. WATSON,
Liverpool, General Superintendent.
29th May 1895.

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LIST of the CUNARD COMPANY'S steamers, with the alterations made at the demand of the Surveyors to the Board of Trade.

"Cephalonia," chock on screen altered (*see* Tracing), May 1893.
"Aleppo," June 1893.
"Bothnia," June 1893.
"Servia," July 1893.
"Catalonia," July 1893.
"Skirmisher," July 1893.
"Aurania," wood face trimmed (*see* Tracing), July 1893.
"Gallia," screen bent inboard (*see* Tracing), August 1893.
"Etruria," screen bent inboard (*see* Tracing), September 1893,

"Umbria," screen bent inboard (*see* Tracing), September 1893.
"Pavonia" (*see* tracing). September 1893.
"Campania." Passed by Board of Trade in Glasgow.
"Lucania." Do. do.
"Sylvania." Do. do.

Wm. Watson,
General Superintendent.

Liverpool,
29th May 1895.

30, Jamaica, Glasgow,
26th June 1895.

App. 18.

Sir,

We have duly received your favour of 25th instant. All the information asked for in your letter of 18th May must be in the possession of the Board of Trade surveyors, who are in a better position to furnish what is required than we are.

We are, &c.
G. and J. Burns.

Note.—See also letter from the Pacific Steam Navigation Company, page 269.

## APPENDIX No. 19.

*Papers handed in by the Chairman.*

App. 19.

Letters giving the Opinions of Shipowners on the Question of Screening.

Side Lights Committee, Board of Trade,
25th June 1895.

I am directed by the Committee on Side Lights to state that it will be of great assistance to them if you will be good enough—

1. To inform them whether or not you approve of the present rule which requires side lights to be screened to 4° from the outside edge of the wick, with the reasons, so far as you will be good enough to state them, for your approval or disapproval:

2. If you do not approve of the present rule, to state the angle to which you consider side lights should be screened, and whether this angle should be calculated from the outside, middle, or inside of the wick, or in any other way.

I am, &c.
C. Hipwood,
Secretary.

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Thos. Wilson, Sons, & Company, Limited,
Hull, 26th June 1895.

Sir,

In reply to your letter of the 25th instant we beg to inform you the whole of our fleet of steamships, having had their side lights screened to the 4° angle from the outer edge of the wick, by the Board of Trade staff here, we are quite satisfied with the present arrangement, and see no reason to make any further alteration.

Yours, &c.
James Rutter,
Marine Superintendent.

---

12, John Street, Sunderland,
26th June 1895.

Sir,

In reply to your communication of yesterday's date my marine surveyors inform me they do not think the present arrangement of the 10 point bearing could be improved upon.

The seafaring men whom I have consulted feel very strongly against any alteration from the present arrangement of the side lights.

I am, &c.
James Westoll.

---

Greenock, 26th June 1895.

Dear Sir,

We have your circular of yesterday. In our opinion for all practical purposes it is better to place side light screens parallel with the ship's keel and fasten on the ends of the screens a batten, in thickness equal to the distance from the face of the screens to the inner edges of the lenses of the lamps.

Yours, &c.
A. & J. H. Carmichael & Co.

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Wm. Johnston and Company, Limited,
Liverpool, June 26th, 1895.

Dear Sir,

We are in receipt of your communication of the 25th inst. and beg to inform you we are most strongly opposed to the new rule which requires side lights to be screened to 4° degrees from the outside edge of the wick, our belief being that the same may lead to serious collisions.

This opinion is unanimous throughout the commanders of our steamers as well as of our marine superintendents.

We would strongly urge reverting to the old rule, which has been found to work well in practice now for a long period.

We are, &c.
Wm. Johnston and Company, Limited.

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Shipowners' Parliamentary Committee,
1, Whittington Avenue, London, E.C.,
26th June 1896.

Sir,

I beg to inform you that I have submitted your circular of yesterday, upon the subject of side lights, to the chairman of this Committee.

He, however, directs me to state in reply that the subject does not, in his opinion, fall within the proper scope of the work of this Committee, and therefore, he is not prepared to invite the Committee to express any opinion upon the subject.

I am, &c.
W. H. Cooke,
Secretary.

---

Andrew Weir and Company,
102, Hope Street, Glasgow,
26th June 1895.

Dear Sir,

In reply to your circular of yesterday's date, we have to inform you that we have not had a single complaint from any of our captains regarding side lights as they are at present.

Yours, &c.
A. Weir & Co.

---

Liverpool, 27th June 1895.

Sir,

In response to your circular letter of the 25th inst., we have to say—

1. That we entirely disagree to the present 4° angle from the outside edge of the wick.

2. We are strongly in favour of the original angle of 2° from the middle of the wick.

We may add that all our senior and junior captains (numbering 16), as well as our certificated officers, are of the same opinion, and further that the assumed "dark lane" is a myth.

Yours, &c.
James Moss & Co.
Managers of the Moss Steamship Co., Limited.

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Mersey Chambers, Liverpool,
27th June 1895.

Sir,

In reply to your communication of 25th inst. we beg to say—

1. That we strongly disapprove of the rule which requires the side lights to be screened to 4° from the outside edge of the wick as it is misleading, and renders it possible for them to be seen too far across either bow.

2. We consider the side lights should be screened on a line parallel to the keel of the vessel, measured from the outside edge of the wick.

We are, &c.
Thos. and Jas. Harrison.

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APP. 19.

Peninsular and Oriental Steam Navigation Co.,
122, Leadenhall Street,
London, E.C.,
27th June 1895.

SIR,

IN reply to your favour of 25th inst., we beg to say that we do not approve of a hard and fast rule, which requires "side lights to be screened 4° from the "outside edge of the wick," for the reasons advanced through Admiral Wharton, by the late Committee that sat on this matter, *seq.*—

> "At the same time, we desire to point out that no strict uniformity of the angle at which the full strength of the lights is, in practice, visible, is possible, so long as a great variety of lamps are in use, and in view of this fact, as well as of the great improvements which have been, and are being made in the construction of lamps, and in the power of illuminants, and in the great increase in the size and speed of ships, we think that the Board of Trade should, in certain cases, have power to allow the angle of screening, upon the request of the shipowner, to be reduced to 3°, or even in cases of very long ships, to 2°."

An unvarying rule of screening at a fixed angle, cannot, in our opinion, be applied to all classes of ships (at the same time, in saying this, we desire to speak without prejudice, until the results of your investigation, which will doubtless exhaust the subject, are made public) we are impressed with the idea, the finer the angle of screening the greater should be the immunity from danger in general.

I am, &c.
F. R. KENDALL,
For the Managing Directors.

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Baltic, Continental, and Portuguese
Steamship Offices,
Commercial Road, Hull,
27th June 1895.

DEAR SIR,

IN reply to your circular of 25th inst., *re* side lights, we beg to state that we are quite satisfied with the rules applicable at present.

Yours, &c.
For BAILEY and LEETHAM,
H. S. KIRKUS.

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The Angier Steam Shipping Company, Limited,
118, Bishopsgate Street, Within, E.C.,
London, 28th June 1895.

DEAR SIR,

IN reply to your inquiry, our experience from sea voyages in our own boats and observations, we unhesitatingly are of opinion that the lights should be placed so as not to cross the bows at any point ahead.

Yours, &c.
For ANGIER BROTHERS,
C. B.

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The Greenock Steamship Company, Limited,
Greenock, 28th June 1895.

SIR,

IN reply to circular of 25th inst. issued by the Committee on Side Lights, I have now the pleasure to submit answers to the queries which I hope will be found useful to the Committee when dealing with this most important subject:—

First.—I do not approve of the 4° angle because the lights placed at this angle would cross each other at a relatively greater distance ahead of the broad vessel as compared with vessels of narrower beam increasing considerably the range of dark lane which it is of the utmost importance should be avoided.

Second.—The angle should be taken from the centre of the wick because the rays of light diverging from the centre would be a more reliable point to take the angle from, than from either the outer or inner edge of the wick, as the wick is not always properly trimmed, consequently the flame is not always of uniform intensity.

The above replies have been very carefully considered in conjunction with Captain George J. Allan, Marine Superintendent of the Greenock Steamship Company, Limited, under my management, and, at his request, I have pleasure in adding that from his experience he is convinced that if side lights were placed within a reasonable distance from each other (the closer the better) and the lights to show from direct ahead to two points abaft the beam less confusion would result. The angles of the lights on several of our steamers have been repeatedly altered to satisfy the views of different surveyors.

I am, &c.
D. MACDOUGALL.

---

57, Gracechurch Street, London, E.C.
28th June 1895.

SIR,

IN reply to your letter of the 25th inst. we have to inform you that we do not approve of the present rule which requires side lights to be screened to 4° from the outside of the wick.

We are of opinion that the side lights of any ship should be screened on a line with the keel, and so that the rays of either light should show as little across the bows as possible.

We are, &c.
JOHN FENWICK & SON.

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Glasgow, 28th June 1895.

SIR,

WITH further reference to your letter of the 25th inst. we have given considerable attention to the subject of screening of side lights, and we have also discussed the matter with many of our masters and officers since the question first came so prominently before the public, and in reply to your inquiry—

1. We do not approve of the present rule which requires side lights to be screened to an angle of 4° inwards from the line of keel.

We do not approve of any system of screening by which the "direct rays" of the red light are visible from the starboard side of the line of keel projected ahead, or the "direct rays" of the green light from the port side of the line of keel projected ahead.

All the masters and officers we have consulted on this point deny the existence in practice of any dark lane ahead of a ship, and this is confirmed by a member of our firm who has had considerable nautical experience. Geometrically such a lane may be traced, practically it does not exist as the course of a ship cannot be kept mathematically straight, and even under the most favourable conditions of sea, wind, and careful steering, a ship's head is continually moving from one side to the other showing either one or the other or both of the side lights; in addition to this while the "direct rays" of any light screened from the outside edge of the wick in a line parallel to the keel of the vessel may be theoretically cut off from the vision of any person on the other side of the line of screen projected ahead yet the divergent rectilinear rays, which emanate from the lens of a side light, are seen beyond such direct line, and it seems to be a well recognised experience among officers at sea that while their line of vision is crossing the theoretical dark lane the divergent rays or "loom" as above described are always seen during such brief interval.

2. We are of opinion that side lights of vessels should be screened in a line strictly parallel with the keel measured from the outer edge of the wick, but as the "burners" or "wickholders" are frequently made flat this would lead, if fixed in the lamp "fore and aft" instead of "athwart-ship," to the direct rays of the light not being visible up to the line of the keel, and we would suggest therefore that the "burners" should be circular and the measurement taken from the outside of the wick.

We have, &c.
CAYZER, IRVINE, & Co.

---

Glasgow, 1st July 1895.

SIR,

WITH further reference to our letter of the 28th ult. we find that a clerical error was contained in that letter, and we would be glad if you take a note of the change.

The last two lines of the letter should have read: "taken from the middle of the wick."

We have, &c.
CAYZER, IRVINE, & Co.

Pacific Steam Navigation Company,
Liverpool, 28th June 1895.

Sir,

We have to acknowledge the receipt of your letter dated 25th instant, and in reply to the inquiry as to the manner in which the steamers of this Company were screened prior to the issue of the instructions requiring all vessels to be screened to 4°, have simply to state that the screening of the lights was to the order of the Board of Trade surveyors in every case which we presumed to have been in order.

In reply to Questions 1, 2, and 3 in your letter of 18th instant, viz.:—

In what ships were the screens altered in consequence of the new instructions?

In which of these ships were the chocks cut down; and

In which were the chocks deepened?

We have to say that the screens were altered in the four steamers of the Company running in the Orient Line between London and Australia, viz., "Orizaba," "Oroya," "Orotava," and "Oruba," and in the following steamers of the Liverpool and Valparaiso Mail Line, viz., "Iberia," "Liguria," "Potosi," "Britannia," "Sorata," and "Galicia"; that the screens were shortened and chocks cut down in all the steamers, and that in none of them were the chocks deepened.

With reference to your further letter dated 25th instant we have to state that we do not approve of the present rule which requires side lights to be screened to 4° from outside edge of wick, as we consider such screening attended with danger, as these lights can be seen at one time in different positions of the ship. This previously meant the approaching ship coming straight towards you, whereas now it does not, and consequently the rules of the road in practice for such a long time may become a positive danger if followed out. Under separate cover we send you a diagram illustrative of this.

As we do not approve of the present rule we beg to state in answer to Query No. 2 in the same letter, that we consider the angle of screening should never exceed 1° outside of the wick, that the crossing of the rays should under no circumstances be under 5 cables length from the bow, that there should be two sizes of standard side and masthead lights, one for vessels that steam up to nine knots, the other of the highest power and best lenses for steamers of higher speed, and finally, that there should be absolute uniformity in colour and position of side lights.

Yours, &c.
Henry Ward.

---

"Australasian" Line of Packets,
25, Water Street, Liverpool,
29th June 1895.

Dear Sir,

In reply to your circular letter of the 25th inst. the side lights should be screened to 4° from the centre of the wick, so that there will be no dark lane ahead of the ship between the two lights; but certainly not to have the lights to show on the other bow.

Yours, &c.
Gracie, Beazley, & Co.

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The Shipping Federation, Limited,
101, Leadenhall Street, London, E.C.,
29th June 1895.

Sir,

I have to acknowledge your circular letter of the 25th instant regarding the screening of side lights, which matter does not come within the scope of the Federation rules, and my executive are therefore not prepared to express any corporate opinion on the subject.

I may, however, say that some of our association members are deeply interested in the matter; and—

(1.) None of them who have expressed opinions on the subject approve of the present rule, which requires side lights to be screened to 4° from the outside edge of the wick, and for the reason that such screening causes the direct rays of light to cross the bows in contravention of the articles.

(2.) They consider that the side lights should be screened in strict accordance with the Order in Council of August 1884, by adhering to the arc of 10 points, starting from two points abaft the beam, so as to allow the direct rays of light to be seen right ahead, on a line drawn parallel with the keel at the lamp station on either side, touching the inner edge of the lens, as there may be no wick in some cases.

I am, &c.
G. A. Laws,
General Manager.

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Royal Mail Steam Packet Company,
18, Moorgate Street, London,
1st July 1895.

Sir,

I am desired to acknowledge the receipt of your letter of the 25th ult., and in reply to say that—

(1.) This company do not approve of the present rule which requires side lights to be screened to 4° from the outside edge of the wick, because when so screened the rays are seen across the opposite bow at an angle which will require two ships approaching each other on nearly parallel courses to act under different articles of the regulations for preventing collisions at sea, when, by keeping their original courses they would pass clear of each other, and if meeting under similar conditions in daylight they would not alter their course at all.

(2.) The company consider that the side lights should be screened to show as little as possible across the bow, but we do not think it would be prudent to reduce this beyond the angle produced by screening the light straight ahead parallel to the keel from the inside edge of the wick, thus allowing the whole of the wick to be seen right ahead of the light, and the rays from the outside edges to cross at a considerable distance ahead of the ship.

I am, &c.
J. A. Barrett,
Assistant Secretary.

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Shaw, Savill, and Albion Company, Limited,
34, Leadenhall Street, London,
2nd July 1895.

Sir,

In reply to your circular of 25th June we beg to state—

1. (*a.*) We do not approve of any arrangement of side lights which will permit of the lights intersecting each other at any angle whatever.

(*b.*) Our chief reason is that it is essential that the master of a vessel should know at the earliest possible moment when he has crossed the bow of an approaching vessel, and that there should never at any time be the possibility of doubt as to which bow of the approaching vessel is presented to him.

2. We think the lights should be so placed as to describe an arc extending from right ahead of the light, parallel with the keel, to two points abaft the ship's beam. It is suggested that side lights so placed leave a "dark lane" between them, but we have not found that such lane has any practical existence. Even if such dark lane did exist it would form a less source of danger and perplexity than would arise when the lights of an approaching vessel cross each other in front of her track.

We are, &c.
J. A. Potter,
Shaw, Savill, and Albion Co., Limited.
Manager.

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1, India Buildings, Liverpool,
2nd July 1895.

Sir,

I have to thank you for your letter of 25th ultimo.

I consider that side lights screened under the present rule answer their purpose with sufficient practical accuracy, but as this purpose was, in my judgment, equally well served by the previous regulation, which I understand to be that adopted by other maritime nations, I regret that the present regulation has been enforced.

Yours, &c.
Alfred Holt, Manager,
Ocean Steamship Company.

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Liverpool, 2nd July 1895.

Sir,

In reply to your letter of the 25th ultimo, we have to state that we disapprove of the present rule requiring side lights to be screened to 4° from the outside edge of the wick.

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Our reasons for this disapproval are —

(1.) That when the side lights are so screened it is impossible for vessels to be correctly aware of the relative positions of one to another, or what course to take when the two lights can be seen across the bow of the ship.

(2.) That there is no international agreement with other countries for side lights to be similarly screened.

We consider that the old rule whereby side lights were to be screened from the inside of the wick to the outside of the chock on the screen, and parallel to the keel of the ship provided in the best possible way for preventing collision at sea.

We are, &c.
LAMPORT AND HOLT.

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23, Market Street, Aberdeen,
SIR, 2nd July 1895.

I DULY received your letter of 25th ultimo, and am directed by my association to say that they disapprove of the side lights being screened as at present because the rays cross too close to the bow of the vessel, and make it difficult to keep a proper lookout from the forecastle head.

The members of my association are not experts, and I am unable to state to you how the angle for screening should be calculated, but they are of opinion that the converging rays should cross not less than two ship lengths ahead of a vessel's bow.

I am, &c.
L. MACKINNON, Secretary,
The Aberdeen Shipowners' Association.

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Clyde Shipping Company, Limited,
21, Carlton Place, Glasgow,
DEAR SIR, 2nd July 1895.

IN reply to your circular letter of 25th ultimo, in regard to screening of side lights, we have to say that we do not approve of the present regulations issued and carried out by the Board of Trade at so much expense for alterations to ourselves and other shipowners.

We considered that the side lights were much better placed on the old system, and gave every satisfaction, and so far as we have ever learned were perfectly safe for navigation.

We considered that the new system of 4° lends itself to confusion more so than the old system.

The old system of screening side lights when parallel with keel gave an angle of 2° over the bow, and so long as this was obtained it was immaterial how it was measured.

Yours, &c.
J. CUTHBERT.

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Asiatic Steam Navigation Company, Limited,
SIR, Liverpool, 3rd July 1895.

IN reply to your letter of the 25th June, we have the honour to state—

1. That we disapprove of the rule quoted in your paragraph 1, and for the following reasons, viz. :—

(A.) The arc within which, under this rule, both lights are seen, is so extended beyond that which obtains under the old rule as to considerably and dangerously increase the difficulty which necessarily arises when vessels meet by night, nearly or quite "end on," of ascertaining on board each ship the relative position and course of the other.

(B.) This rule has not been adopted by other nations, and no international agreement exists for its general adoption.

2. That we consider that the old rule, whereby side lights are to be screened, so that a line drawn from the inside of the wick to the outer edge of the chock at end of the screen shall be parallel to the keel is for all practical purposes satisfactory.

B. We are confident that where this rule is followed, and ordinarily careful seamanship is shown, the risk of collision is reduced to a minimum.

Yours, &c.
TURNER AND COMPANY,
Managers.

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The Hartlepools Shipowners' Society,
SIR, West Hartlepool, 3rd July 1895.

YOUR letter of the 25th ultimo was this morning duly considered at a meeting of members of the above Society, and I am directed to state in reply, that in the opinion of the Society there existed no valid reason for the recent alteration in the shading of side lights.

The Society is of opinion that the record as to collisions, especially as to steamers, is an exceedingly light one, and cannot reasonably be expected to be much lessened.

I am, &c.
F. YEOMAN,
Secretary.

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20, Water Street, Liverpool,
SIR, July 3rd, 1895.

IN reply to your favour of the 25th ultimo, we beg to state that we entirely disapprove of the rule requiring side lights to be screened to 4° from the outside edge of the wick.

The reasons for which we object to the said rule are (1) that it is not adopted by the mercantile marine of other countries, and (2) we consider it most difficult for vessels to correctly judge each other's position when the two lights can be seen across the bows of the vessel. We consider the old style of screening side lights an infinitely preferable and safer one, *i.e.*, where the lights are screened from the inside of the wick to the outside of the chock on the screen.

We remain, &c.
JOHN GLYNN AND SON.

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The Clyde Steam Shipowners' Association,
24, George Square, Glasgow,
SIR, 3rd July 1895.

REFERRING to your circular letter of the 25th ultimo my directors desire me to say that a number of the leading members of this Association have received similar circulars and are going into the question with their superintendents with the view of writing to you direct. In these circumstances my directors do not deem it advisable to reply to your questions in the collective name of the Association.

I am, &c.
NEILSON BIRD,
Secretary.

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19, Tower Buildings North, Liverpool,
SIR, 3rd July 1895.

IN reply to your letter of the 25th ultimo, we have to state that we disapprove of the present rule requiring side lights to be screened to 4° from the outside edge of the wick.

Our reason for this disapproval are—

(1st.) That when the side lights are so screened it is impossible for vessels to be correctly aware of the relative positions of one another or what course to take when the two lights can be seen across the bow of the ship.

(2nd.) That there is no international agreement with other countries for side lights to be similarly screened.

We consider that the old rule whereby side lights were to be screened from the *inside* of the wick to the outside of the chock on the screen and parallel to the keel of the ship provided in the best possible way for preventing collision at sea.

We are, &c.
ROBERT ALEXANDER & Co.

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Shipowners' Association,
6, Water Street, Liverpool,
DEAR SIR, 3rd July 1895.

YOUR circular letter of the 25th June has been laid before the Committee of this Association by whom we are directed to say that they do not approve of the rule which requires side lights to be screened 4° from the outside edge of the wick on the grounds—

(1.) That when so screened the two side lights can be seen across the bow of the ship; and

(2.) That there is no international agreement with other countries providing for the international adoption of this rule.

In their opinion side lights should be screened in accordance with the Order in Council of August 1884 and the practice which has obtained for years, and that the angle should be calculated from the inside of the wick.

We are, &c.
WEIGHTMAN, PEDDER, & Co.
Secretaries.

27 and 29, James Street, Liverpool,
SIR, 4th July 1895.

REPLYING to your letter of the 25th ult., after going carefully into the matter with our captains, we have come to the conclusion that we must disapprove of the present rule requiring side lights to be screened to 4° from the outside edge of the wick.

And the reasons for our disapproval are—

1. That when the side lights are so screened it is impossible for vessels to be correctly aware of the relative positions of one to another or what course to take when the two lights can be seen across the bow of the ship.
2. That there is no international agreement with other countries for side lights to be similarly screened.

We consider that the old rule whereby side lights were to be screened from the inside of the wick to the outside of the chock on the screen and parallel to the keel of the ship provided in the best possible way for preventing collision at sea.

We are, &c.,
For FREDK. LEYLAND & Co., Limited.
M. MCMURPHY,
Manager.

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"Anchor" Line,
45 to 57, Union Street, Glasgow,
SIR, 4th July 1895.

IN reply to your communication of 25th ult., we have to state that we do not approve of the present rule which requires side lights to be screened to 4° from the outside edge of the wick, as it has the effect of showing the lights across the bows.

We were perfectly satisfied with the system that existed previous to the application of the new rule, and we are not aware that it was found in practice to be in any way objectionable.

We are, &c.
HENDERSON BROTHERS.

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SIR, Liverpool, 5th July 1895.

IN reply to your letter of the 25th ult., we have to state that we disapprove of the present rule requiring side lights to be screened to 4° from the outside edge of the wick.

Our reasons for this disapproval are: (1) that when the side lights are so screened it is impossible for vessels to be correctly aware of the relative positions of one to another, or what course to take when the two lights can be seen across the bow of the ship; (2) that there is no international agreement with other countries for side lights to be similarly screened.

We consider that the old rule whereby side lights were to be screened from the inside of the wick to the outside of the chock on the screen and parallel to the keel of the ship provided in the best possible way for preventing collisions at sea.

We are, &c.
HAMILTON, FRASER, & Co.

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The Cunard Steamship Company, Limited,
Secretary's Office, Liverpool,
SIR, 8th July 1895.

REPLYING to your letter of the 25th ult.—

1. We disapprove of the present rule which requires side lights to be screened to 4° from the edge of the wick, for the following reasons:—
   (1.) It is contrary to the international regulations.
   (2.) When lights are so screened it is impossible for a vessel seeing both side lights of an approaching vessel to tell within 8° of the course she is steering, thus causing uncertainty and risk of collision.
2. The international rule we consider the best possible safeguard against collisions at sea.

The above is the unanimous opinion of our commanders and officers.

I am, &c.
T. MOORHOUSE,
Secretary.

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Mersey Chambers, Liverpool,
SIR, 9th July 1895.

REPLYING to your favour of 25th ult., we strongly disapprove of the present rule requiring the side lights to be screened to 4° from the outer edge of the wick.

Because—

(1.) Where the side lights are so screened it is impossible for vessels to judge correctly their relative positions one to another, or what course to take when both lights are seen across the bow. APP. 19.

(2.) There is no international agreement for side lights to be so screened.

We consider that the old rule whereby side lights were screened from the inside of the wick to the outside of the chock on the screen and parallel to the keel of the ship provided in the best way for preventing collisions at sea; and as uniformity of practice and position is all-important, we suggest that Government should endeavour to get an international agreement on this point, instead of insisting on the present 4° rule, which nearly all competent and practical maritime authorities condemn.

We are, &c.
For the BEDOUIN STEAM NAVIGATION COMPANY, LIMITED.
W. AND R. THOMSON,
Managers.

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British India Steam Navigation Company, Limited,
9, Throgmorton Avenue, London,
SIR, 9th July 1895.

I DULY received your letter of the 25th ult., and have the honour to reply as follows to the inquiries made—

(1.) We do not approve of the present arrangement of screening side lights to 4° from the outside edge of the wick principally for the following reasons—

(*a.*) An approaching ship might not be able to tell in sighting three lights how she is relatively situated to the one she is meeting.

(*b.*) We prefer to have our side lights at the sides of the bridge in order that they may be continually under the eye of the officer of the watch. The present arrangement makes it often impossible to do so on account of obstructions in the way, and in such cases it is necessary in order to comply with the law to fit the lights forward where they are removed from the observation of the officer on the bridge.

(2.) We consider that the lights should be screened to the line of the keel. This would obviate any mistake on the part of an approaching ship and would, in most cases, make it possible for the lights to be fixed on the sides of the bridge.

I am, &c.
R. W. ARMOUR,
Joint Secretary.

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80, Buchanan Street, Glasgow,
SIR, 11th July 1895.

WE duly received your letter of 25th ult. containing questions put by the Committee on Side Lights and as we presume that the Committee would prefer to have opinions from experienced men, we sent copies of these questions to two of our shipmasters and herewith you have their replies.

Captains Pattman and Radford are men of ability and experience and we hope that their opinions will be of value to the Committee.

We are, &c.
AITKEN, LILBURN, AND COMPANY.

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Ship "Loch Broom,"
S.W. India Dock, London,
GENTLEMEN, 2nd July 1895.

WITH reference to your letter of 28th June concerning side lights I have thought over very carefully my experience in the English Channel and elsewhere, and have come to this conclusion.

No. 1. I do not approve of the 4° angle of crossing from the outside of the wick for the following reason. Bearing in mind sections (*b*), (*c*), and (*d*) Art. 2 of the regulations which set out that side lights shall be fixed so as to throw the lights from right ahead to two points abaft the beam (10 points in all) and screened so as to prevent the lights from being seen across the bow, and I believe it is in the interest of safe navigation to narrow the field in which the two lights may be seen together as much as possible.

No. 2. In my opinion the lights should be screened in a fore and aft line the points to calculate from being

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the middle of the wick or flame and the outer edge of the screen chock. I have no doubt this arrangement will give ample if not full show of the lights right ahead.

I am, &c.
JOSEPH RADFORD,
Master.

Messrs. Aitken, Lilburn, and Company, Glasgow.

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Ship "Loch Torridon,"
S.W. India Dock, London,
2nd July 1895.

GENTLEMEN,

IN accordance with your wish I herewith send you my replies to the questions you received from the Side Lights Committee. In reply to question No. 1, I am in favour of the regulations in force prior to January 1892. The lights being so screened as to show the light right ahead, giving in theory a so-called "dark lane" which in practice did not exist. The present system of screening lights allows them to converge at calculated distances of from 70 to 500 feet ahead of the screens and which shows according to nautical ideas across the bows. Especially in rivers and narrow waters is this a source of great and serious danger to safe navigation, besides placing a British ship, in case of collision with a foreign ship, at a great disadvantage in the Admiralty Courts, as the rule enforced since January 1892 is not an international rule or law.

In reply to question No. 2. I consider that my reply to No. 1 replies to this also. That is the rule or regulations in force prior to January 1892 should be again adopted.

I remain, &c.
R. PATTMAN,
Master.

Messrs. Aitken, Lilburn, and Company, 80, Buchanan Street, Glasgow.

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Glasgow Shipowners' Association,
30, Gordon Street, Glasgow,
11th July 1895.

SIR,

I WAS duly favoured with your circular letter of the 25th ult., containing the two queries put by your Committee *re* side lights.

I enclose copy of one reply which I have received to the circular, which I issued to the leading firms who are members of this Association, but I understand that Messrs. Cayzer, Irvine, and Co., Messrs. Henderson Brothers, and Messrs. James and Alexander Allan have been in direct communication with you on the subject.

I shall write again should I receive any further communications on the subject.

I am, &c.
J. MUIRHEAD,
Secretary.

*Copy letter referred to.*

Glasgow, 8th July 1895.

DEAR SIR,

IN answer to your letter of the 1st inst. *re* the screening of sidelights, I must say that I do not approve of the present rule which requires side lights to be screened from the outside edge of the wick so that the rays shall cross the line of the ship's keel.

To see both side lights at the same time must be embarrassing to masters and pilots in narrow waters, especially when steamers and sailing vessels get into close quarters, in which case it would be easy to mistake the red light of a steamer and the green light of a sailing ship for the lights of one steamer.

I consider that the side lights should be screened so as to show in a straight line with the ship's keel from the inside edge of the wick, and prevent them being seen across the bow.

Yours, &c.

The Secretary,
Glasgow Shipowners' Association.

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19 and 20, Chapel Chambers North,
28, Chapel Street, Liverpool,
13th July 1895.

SIR,

IN reply to your letter of the 25th ult., we beg to state that we disapprove of the present rule requiring side lights to be screened to 4° from the outside edge of the wick.

We disapprove, because when so screened it is impossible for vessels to be correctly aware of the relative positions of one to another, or which course to take when the two lights can be seen across the bow of the ship, and there is no international agreement with other nations for side lights to be similarly screened.

In our opinion the old rule, whereby side lights were to be screened from the *inside* of the wick to the outside of the chock on the screen and parallel to the keel of the ship provided in the best possible way for preventing collision at sea.

We are, &c.
STRONG, REID, AND PAGE.

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Waterford Steamship Company, Limited,
Waterford, 15th July 1895.

SIR,

IN reply to your letter of 25th ult., we have to state that in our opinion the lights should be so screened that the outside edge of the wick and outside of the chock would be in line and parallel with the line of the keel; this is the only way in which the international regulations could be observed, and the arc of visibility of the light kept to 10 points; screening to the inside edge of the wick would allow the light to show at an angle of about 2° across the bow, and would not accord with the international regulations.

I am, &c.
C. MORLEY,
Managing Director.

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General Shipowners' Society, London,
1, Whittington Avenue,
Leadenhall Street, E.C.,
July 16th 1895.

SIR,

I HAVE to acknowledge the receipt of your circular letter of the 25th ult. regarding the screening of side lights which I have submitted to the Committee of this Society for their consideration.

In reply, I have to say—

(1.) My committee do not approve of the present rule which requires side lights to be screened to 4° from the outside edge of the wick for the reason that such screening allows so much light to cross the line of the ship's bow as to cause uncertainty as to the course which she is steering.

(2.) My committee consider that ordinary side lights should be screened to 0° of convergence from the inside edge of the wick, the position of the wick being fixed, and its width limited.

(N.B.—This screening would, with the present ordinary position and width of wick, give about 2° of convergence from outside edge of wick.)

I am, &c.
W. H. COOKE,
Secretary.

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Palmerston Buildings, 93, Bishopsgate Street,
London, E.C., 17th July 1895.

DEAR SIR,

REFERRING to your letter of the 25th ultimo *re* side lights, we do not approve of the present rule which requires the side lights to be screened to 4° or any angle.

It seems to me the old rule was much better, *i.e.*, the side lights to run parallel with the line of vessel and show two points abaft the beam, because two ships meeting end on, or nearly so, can see at a glance what each are about to do, as the slightest deviation off their course on either side immediately closes in one light and opens out the other. The 4° angle keeps both lights open too long, and when seen that the course has been altered on one ship or the other, it is often too late to avoid colliding.

Yours, &c.
R. GORDON & Co.

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Stockton Shipowners' Association,
Stockton-on-Tees,
19th July 1895.

SIR,

I HAVE to acknowledge the receipt of your valued favour dated the 25th ultimo *re* arrangement of side lights, and in reply am instructed to state that we agree that it is desirable that the lights should be screened from the outside edge of wick, but would suggest that they should be arranged to impinge at the point of extreme range of lights, say, 2 miles, instead of 4°, as required at present, which we consider too close for safety.

I am, &c.
E. ASTON,
Hon. Secretary.

"Allan" Line and "State" Line of Steamers,
25, Bothwell Street, Glasgow,
DEAR SIR, 22nd July 1895.

WE duly received your favour of 25th ult. *re* screening of side lights.

We have been in communication with a considerable number of our masters, and find their opinion is practically unanimous in condemnation of the present rule as being dangerous, and likely to lead to accidents.

Their opinion is that the 4° angle causes the lights to cross too near the bows of steamers, and makes it most difficult for vessels meeting to know whether the other is coming end on or not, and that, in narrow and crowded waters, the present screening is specially objectionable and conducive to danger. In some of the smaller and narrower vessels, too, the glare of the light shows across the forecastle deck in foggy weather and attracts the eye.

Our masters attach no practical importance whatever to the dark lane theory, although we think it only fair to say that we have not as yet heard of a case in practice in which difficulty has arisen from the lights being screened to the 4° angle.

Their opinion is also practically unanimous in recommending a reversion to the old practice of screening the lights so as to show in a line parallel with the keel from the inside of the wick to the outside of the chock of the screen (and, of course, two points abaft the beam), but possibly it might be better, instead of the inside of the wick, to adopt the centre of the burner, as in screwing in burners there is a tendency for these to adopt fore and aft or other positions. Care should also be taken that in screening the side lights the value of the lights be not impaired, and it may be worthy of consideration whether something should not be done to ensure greater uniformity in the shade of colour of the glass of side lights, as at present the green lights can sometimes hardly be distinguished from white.

We are strongly of opinion that even were the present method of screening unobjectionable in itself, it should be discountenanced and abandoned until an agreement were come to with other maritime countries to adopt it. The object to be attained in screening the side lights to the 4° angle is, as we understand it, to prevent the lane between the converging rays of the lights in which they are invisible or indistinctly seen extending too far ahead of the ship, and in our opinion it would be sufficient if both lights could be distinctly seen from either side of a vessel's bridge 350 yards ahead of the lights. It seems to us from Sir Digby Murray's experiments (pp. 36 and 37 of the Blue Book) that this would be attained by screening the lights to an angle of 3°, care being taken as to the quality of the lights, especially the green.

We are, &c.
JAMES and ALEX. ALLAN.

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GENTLEMEN,

IN reply to your circular of the 25th June 1895 relating to our opinion on the side lights which has not been answered in consequence of writer's absence in whose department it is, we may say we feel it difficult to answer right off without more explanations than we can commit to writing.

First we see no objection to the present rule which requires the side lights to be screened to 4° from the outside of the wick, provided that the light does not exceed that angle; in providing for this the position of lights have to be taken to account, as in a steamer with a length of 400 feet, and the lights in the middle of the vessel of broad beam, the dark lane would not be the same as the same vessel with the side lights exhibited from the forecastle lighthouses 30 feet from the stem, and narrowed, say, in a fine pointed vessel probably 16 feet less than extreme beam than if placed amidships; then again, there is a great difference in the ordinary cargo boat with a bluff topgallant forecastle when in ballast to what she is when loaded; the vessel usually being a lot by the stem and the ship a lot of sheer, the light becomes obscured until the vessel has a broad sheer from a right ahead line, then if this vessel had the lights on the forecastle, the result of the placing of the lights at different places causes intense confusion; as in no two vessels do the lights intersect at the same distance from the vessel, the distance being controlled by the beam of the vessel the position placed in, the sheer and whether light or loaded.

Our opinion as to where the angle should be taken from of the wick; we opine that the 4° should be from the outside of the wick. There is a great deal depends on the reflector and the strength of the light; with a screen 3 feet long the distance at which the lights cut can easily be worked, and when 4° is used, or the old method of the wick just clearing the block at front of the screen. The great trouble is want of uniformity in placing the lights on vessels; our opinion is that they ought always to be placed in such position as the officer of the watch can have them under observation at all times, and that all lamps and burners ought to be examined and certified by an officer of the Board of Trade and that alterations should not be permitted to be made with the lights and screens after having been passed by an officer of the Board of Trade as it induces a sort of contempt for the experience of the officers when such differences arise at the various ports.

If writer has diverged from the direct answers required in your circular he could not even touch the question without such explanations and the experience of 55 years, even going before lights were in vogue at all right up to date as I have made lights a part of my study from their introduction.

For MOREL BROS. & Co.
OLIVER PHALP,
Marine Superintendent.

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The Indo-China Steam Navigation Company,
Limited,
29, Cornhill, London, E.C.,
SIR, 24th July 1895.

I AM in receipt of your circular letter of 25th ult., and in accordance with your request for information, have passed your letter on to several of our captains now at home on leave, I beg to enclose their replies, which you will notice are unanimously in favour of a continuation of the present arrangements.

Yours, &c.
A. G. WELLS,
Secretary.

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Avondhu, Grangemouth,
DEAR SIR, 2nd July 1895.

I RECEIVED your letter of yesterday, with the enclosed form, copy from the Side Lights Committee. In reply, I beg to state that I approve of the present rule for the side lights, as it is simple, and gives no trouble; I think, however, that the side lights of all steamers should be carried on the bridge, so that the officer of the watch can see that they are burning well, and not on the forecastle where the officer has to trust to a quarter-master, or the man on the lookout, to see they burn well.

I am, &c.
H. W. HOGG.

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26, Gordon Street,
Gordon Square, W.C.,
SIR, 3rd July 1895.

IN accordance with your request, I beg leave to say the present angle of shade for side lights, viz., 4°, is in my opinion amply sufficient for all purposes.

I remain, &c.
FREDERICK DAVIS.

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The Priory, Fortrose,
DEAR MR. CHEYNE, 22nd July 1895.

I HAVE been making inquiries *re* the proposed changes in side lights, and have come to the conclusion that the present rule, which requires side lights to be screened to 4° from the outside edge of the wick to be all sufficient.

I think that any change would be confusing for a very long time, and would very likely be the cause of a number of collisions before they were properly understood.

Yours, &c.
W. D. M. YOUNG.

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Stoke Barton, Hartland, North Devon,
5th July 1895.

Dear Sir,

I received your letter of 1st instant yesterday.

I did not know that there was any idea afloat for the alteration of the screening of side lights until now, and quite fail to understand why any alteration should take place. I approve of the present rule, which requires side lights to be screened to 4° from the outside edge of the wick. I have known or heard of no difficulty or accident arising from the present system of screening, and, speaking from results, do not consider it necessary to alter it.

Yours, &c.
T. R. Galsworthy.

A. Cheyne, Esq.

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The Irish Shipowners' Company, Limited,
113, Corporation Street,
Belfast, 31st July 1895.

Dear Sir,

Referring to your circular letter of the 25th June last—

1st. We do not approve of the side lights being screened as to show so much as 4° across the bow, and our chief reason for this is that, in the narrow excavated channels of our port here, or in the entrance to Baltimore Md., U.S.A., of which we have extensive experience, vessels passing have to pass each other very closely, and it requires a decided alteration in the vessel's course to shut in any one of the lights, and this in a place where it is possible to deviate very little from the straight course with safety.

2nd. We would suggest a compromise, say, of the light to be screened from 1° to 2° from the outside edge of the wick, and for this reason, our experience is that with the old method of screening the lights from right ahead that the lights lose considerably in their brilliancy when viewed from this position.

We are, &c.
Thos. Dixon and Sons.

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North of England Freight, Demurrage,
and Defence Association,
Newcastle-upon-Tyne,
7th August 1895.

Dear Sir,

In reply to your circular letter of the 25th June, I beg to state that my committee consider that the side lights should be screened in accordance with the Order in Council of August 1884, having the arc of 10 points from two points abaft the beam. This has answered well in the past, and they are of opinion that the intended alteration will not be satisfactory.

Yours, &c.
Henry Miller,
Secretary.

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Sunderland Shipowners' Society,
50, West Sunniside, Sunderland,
7th August 1895.

Sir,

Your circular letter, dated 25th June, was laid before my committee to-day, when I was instructed to inform you that having read a copy of the reply given by the General Shipowners' Society of London, this society fully endorses the objections raised therein and approves of the suggestion that ordinary side lights should be screened to 0° of convergence from the inside of the wick.

Yours, &c.
Chas. Booth,
Secretary.

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North of England Steamship Owners' Association,
G, King Street, Quayside,
Newcastle-on-Tyne,
8th August 1895.

Sir,

In reference to your inquiry of 25th June last regarding the screening of side lights, my committee have carefully considered the subject, and have obtained the opinion of a number of nautical experts, who are unanimous in their opinion that the side lights should be screened in direct accordance with the Order in Council of August 1884, by adhering to the arc of 10 points, starting from two points abaft the beam, so as to allow the direct rays of light to be seen right ahead on a line drawn parallel with the keel at the lamp station on either side, touching the inner edge of the lens.

I am, &c.
John Morrison,
Secretary.

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General Steam Navigation Company,
55, Great Tower Street, London, E.C.,
17th August 1895.

Sir,

Referring to your circular letter of the 25th June, I beg to hand you herewith a copy of our Marine Superintendent's report expressing his opinion (which, you will notice, he says is confirmed by the captains in our employ) that side lights should be fixed in accordance with the Order of the Council of August 1884, so as to allow the direct rays of the light to be seen from right ahead on a line with the keel of the vessel to two points abaft the beam.

Yours truly,
Charles H. Glyn.

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(*Copy.*)

With reference to the attached letter from the "Side Lights Committee" "*re* screening of side lights," and upon which the directors request my opinion, with regard to both questions numbered 1 and 2, I beg to state that I do not approve of side lights being screened at any angle which would permit the lights being seen across the bow; as it would, in my opinion, increase rather than lessen the risks of navigation, and I venture to express opinion that side lights should be fixed in accordance with the Order in Council of August 1884, that they should be so fixed as to allow the direct rays of the light to be seen from right ahead on a line with the keel to two points abaft the beam.

I may mention that all the captains of this Company, and others with whom I have discussed the subject, are unanimously of the same opinions as those which I have given above.

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16, Bernard Street, Leith,
30th August 1895.

Sir,

In reply to your circular of 25th inst., we have carefully considered the subject, and are of opinion that the angle to which ship's side lights should be screened can only be decided by a balance of advantages.

A small angle means great delicacy, and an approaching ship will indicate at once any deviation in her course; but, on the other hand, a very slight yaw will also result in the obscuration of one of the lights and will suggest an alteration in the helm which has not actually taken place. Again, with a very obtuse angle, a change in the course would not be indicated until a considerable arc had been swept out, and a vessel will seem to be keeping her course some time after she has really altered it. This disadvantage is of special consequence in narrow waters. Taking all the facts into consideration, we think that a small angle offers the greater advantage, and that the present angle of 4° is too large.

We are of opinion, however, that the angle should not be arbitrarily fixed, but should depend on the beam of the vessel, a large vessel having a greater angle; the object to be arrived at being that the rays from the side lights should cross at the same distance ahead of the stem of every ship, and we think that this distance should be fixed at not less than 300 feet for the most divergent ray.

We are, &c.
JAMES CURRIE & Co.

Chamber of Commerce, Belfast, 6th September 1895. App. 19.

SIR,

YOUR letter of 25th June has been considered by the Shipping Trade Section and Council of this Chamber; and I am instructed to say in reply that they consider that side lights should not be screened more than 2° from the outside edge of the wick, instead of 4° as at present.

I am, &c.
SAMUEL VANCE,
Secretary.

## APPENDIX No. 20.

*Papers handed in by the Chairman.*

App. 20, Nos. 1 and 2.

### No. 1.—REPORT on SIDE LIGHTS of SHIPS at SOUTHAMPTON.

All the lamps seen here were very good indeed, probably because the traffic of the port is confined almost altogether to passenger steamers of a high class.

All were of copper, with duplex and triplex wicks, and in most cases the colour was obtained by means of a coloured shade, separate from the lens, with more or less air space between; and it is worth notice that in almost every case of a lamp having the lens coloured (instead of a clear lens and shade) that lens was more or less broken.

It seems as if the shade acts as a protection to the lens from the direct and extreme heat of these powerful burners, thereby preventing the uneven expansion that would occur in such a thick mass, one side of which was exposed to the air, and lessening the difference of temperature between the two surfaces, so that when struck by a sea or body of cold spray and suddenly cooled on the outside there is not the same tendency to rupture as in the lens carrying its own colour and subject to the uninterrupted heat of the flame on the inside.

The majority of the wicks were 1 inch in width, and placed at an angle of 45° to the fore and aft line. In many of the duplex lamps the flames blended and passed through a single opening in the cover.

Triplex wicks gave a very broad flame and of a varying breadth, as it was measured along the side of the triangle or along the line joining apex and base. Each wick had a separate shaft and wheel, so that in whatever position it was placed, it was difficult, if not impossible, to turn one wick without unshipping the whole lamp.

The electric lights found were of 32 c.p., double filaments without curl, placed parallel to one another and at such a distance apart that in whatever position they stood the difference of width of the illumination was practically nil.

Although some of the lamps had not been cleaned since use, no vestige of the accumulation of dirty oil in the angle of the glass was observed.

Notwithstanding the high class of lamp in use, and the expensive mountings, &c., cases of carelessness were found which entirely put all regulations on one side. One or two may serve as examples.

*A.* A 20-knot steamer trading across Channel in all weathers and at all hours had her side lights on the bridge, but so fitted that they must be taken out to trim as there was no means of getting at the door. Her spare lights were *in store on shore*, so that not infrequently she must have been without a side light showing.

*B.* A coaster, trading all round England and Ireland, mostly at sea at night.

Her screens were on the forecastle on davits which turned in when going in or out of docks (an almost daily occurrence) kept in place to the right angle by a hooked stay. This stay, on port side, had been accidentally bent and never straightened again, so her angles of screening were not alike.

In practice, however, these screens were not always used. For bad or dirty weather, movable screens had been made which hung by hooks on the end of the bridge rails. The lights were carried in them.

The angles had not been tested!

*C.* A well found ocean liner, carrying mails, whose triplex lamps swing in gimbals in lighthouses.

These gimbals were fore and aft, so that either the wick must be obscured by the foremost one if truly centred, or if not the slightest heel or roll would alter the position of the wick and the angle of screening + or − in accordance.

Her spare lamps were duplex, of quite a different pattern and size and not fitted for gimbals, so that if required for use a platform would have to be built in the lighthouse for them to stand on, and the angle of screening somewhat uncertain.

There was a very strong feeling that regulations should insist on some uniform method of placing the side lights with reference to the position of the masthead or steam light.

H. H. HALLETT.

### No. 2.—REPORT on SIDE LIGHTS of SHIPS at LONDON.

One of the sub-committees, consisting of Mr. Thomas Scrutton and Sir Edward Harland, visited the West India Docks on June 21, 1895, accompanied by the following Board of Trade surveyors: Captain Wilson, Captain Rowe, Captain Young. They examined the side lights of the S.S. "Atlantis," which they found fixed in lighthouses on the after end of the forecastle deck, which, together with the screens, are constructed of iron, and permanently secured to the deck, with an entrance thereto from under the forecastle.

The Committee, as carefully as possible, endeavoured to check the screening, measuring the angle of such from a centre line stretched fore and aft on the forecastle deck, with the following result, and taking the centre of the wick, as represented by the lights burning.

The port light was screened to an angle of 4·3°, whilst the starboard light was screened to an angle of 1·9°, thus showing a considerable difference, but as it was explained to the Committee that the surveyor had endeavoured to adjust these some time recently by various counter measurements taken below the deck and across, some such errors appeared quite possible. Indeed, so difficult did the Committee find it to determine or check the angle of the screens attached to such lighthouse receptacles for side lights, that they would strongly urge the necessity of a circular hole being cut in such not less than, say, 1½″ in diameter, and in a straight line between the wick of each lamp, so as to enable the surveyor to measure correctly across from the wick of the lamp to the centre line of the vessel, thus to enable him similarly to measure and thereby to adjust accurately the check at fore end of screen. The hole referred to, to be closeable watertight by a pair of iron washers and screw, as only required for removal for such adjustments.

They also inspected the side lights and masthead light of the "Amber," SS., engaged in the cable-laying service, where they also found that the side lights were enclosed in lighthouses at each end of the captain's bridge, nearly amidships. They were so elevated that the difficulty in checking the screening was still greater than in the first instance, either by lighting the lamps, as in the first instance, for observing which there was no platform or deck forward of them nearer than the forecastle, or by attempts at measurement by plummet lines or other means, by reason of

App. 20, Nos. 2–4.

the great internal height of these enclosed iron lighthouses. Hence a still greater necessity of similar holes being cut on each side for purposes of such measurements as already described. The cutting or punching of such holes by the builder in the first instance would be very trifling, and even cutting by hand would entail but little expense, perhaps 2*s.* 6*d.* per pair of side lights.

The Committee found the masthead light secured on the foretop, clear of the foreyard, and no doubt clear of the foot of the topsail when set; and it was contemplated to light the side lights also by electricity.

The four-masted sailing ship "Lough Broom" was also visited, when the side lights were also found in lighthouses on the after end of the forecastle deck. The lanterns were placed therein identically the same as in the "Atlantis," but with the screens cranked close to the lighthouses, so as to avoid the necessity of chocks. The great difficulty in this case of checking the accuracy of such being also the same as in that of the "Atlantis," for want of such holes for measurement referred to. A further attempt was not made to check the angle of these screens.

On Friday, July 5th, 1895, the same sub-committee, accompanied by the following Board of Trade surveyors: Captain Wilson, Captain Young, Mr. Lewis, followed up its investigation by boarding various classes of craft in the Thames below London Bridge, with a launch kindly lent by the Thames Conservancy Board, commencing with the ketch "Water Lily," a Newcastle trader, with side light screens carried on davits just abreast the main rigging, cranked outwards and secured from turning by square part on the davit and in rail. The starboard screen we found $1\frac{3}{4}''$ wider at the fore end than at the after end, measured from the centre line, with a chock $2\frac{3}{4}''$ thick, and the distance of the outer edge of the wick from the screen $5\frac{1}{4}''$, which practically results in the inner edge of the wick and the outer edge of the chock being parallel with the line of keel. The screening of port light was not tested.

We then visited the "Victoria" paddle steamer, a Southend boat, where we found the screen on the port side $1\frac{3}{8}''$ more outboard at the forward end than at the after end, measured from the centre line; thus resulting in the line from outer edge of wick to chock giving 3° of screening, or the chock being thus $\frac{3}{8}''$ too thick to give 4° of screening, with a distance of $4\frac{1}{4}''$ from the screen to the outer edge of wick, and with a chock $1\frac{3}{8}''$ thick.

The three-masted schooner, "Queen of Mistly," we then inspected, with side lights carried on davits outside main rigging. The port screen measured 3′ 2″ from wick to chock. We found the forward end of screen 2″ outside the line parallel with the keel, with a distance of 6″ from screen to the outer edge of wick, and with a chock $3\frac{1}{8}''$ thick, practically resulting in a line, if taken from inner edge of wick to outer edge of chock, being parallel with the keel, or to screen being 2° from outer edge of wick to chock, or in the chock being $1\frac{1}{2}''$ too thick to give a screening of 4° as at present required.

We also saw that the "Perth" SS. of Dundee, had electric side lights, in a lantern and screen immediately above oil lights with lantern and screen, at either end of the captain's bridge amidships.

We are thus led to conclude that there is great irregularity in the screening of side lights in the smaller classes of sailing craft especially, as well as the smaller steamers, though it is possible that such may be accounted for by the very portable manner in which some of them are either allowed to carry their side lights, or that the exigencies of the trade in the working of cargo over almost every point in the bulwarks may present difficulties not yet overcome in side lights being carried in more permanently fixed positions, with a fair chance of such remaining accurate in the intervals between the surveys.

Thomas Scrutton.
E. J. Harland.

1st August 1895.

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No. 3.—Report on Side Lights of Ships at Cardiff.

On July the 6th and 8th we visited the docks at Cardiff for the purpose of inspecting the fittings of side lights and screens.

On the 6th we inspected the vessels in the Bute Docks, and on the 8th those in the Barry Docks, accompanied by Captain Chalmers, the principal Board of Trade officer of the district, who with his assistants made the necessary observations in our presence.

We found that on an average the screens were set at an angle of 4° due possibly to the recent action of the Board of Trade in the matter. One vessel, however, we found screened to 2° 20′ and another to 5°.

The light boxes and screens were fixed in various positions, but the large majority were placed on the captain's bridge. Some were hung on to the bridge rails; many were hung on swinging davits, and a few were in towers.

As regards those hung on the bridge rail, we are of opinion that the rail is generally much too slight to ensure the screen being retained at the proper angle, any slight accident, even the pressure of a funnel guy bearing against the rail, is sufficient to alter the angle of the screen materially.

It would be better if the screens were fitted to a strong projection from the bridge (deck) itself, instead of to the rail.

As to the screens fitted on swinging davits, we found that in most cases the davits were much too slight, and often had considerable play in the sockets; and having but one stay to keep them in position when swung out, any slight accident would put them out of adjustment. It would appear desirable that the davits should be made of iron of not less than a certain strength, that they should be stepped on the upper deck, below the bridge when possible, being passed through a strong iron plate, either on or secured firmly to the bridge, to ensure their being kept in an upright position and free from unnecessary play, and two stays should be used instead of one to prevent any movement of the screen.

In one very well found steamer we found electric side lights fitted in towers under and supporting the bridge, apparently a very good arrangement if sufficiently high to clear the obstructions on the forecastle. In this vessel, however, they had been condemned by the Board of Trade as the lights were interfered with by ventilators on the forecastle, and screens for oil lamps had been fitted at the ends of the bridge. But as the electric fittings were all intact and the lamps in place ready for use, we are of opinion that in all probability they had been in use, notwithstanding their having been condemned, which points to the necessity of having faulty fittings in this respect either rectified or *removed* under the authority of the Board of Trade.

In many vessels we found the coloured lenses cracked, and this was much more frequently the case with the green than with the red lenses. We consider that the plan (approved we believe by the Board of Trade) of using uncoloured lenses and coloured shades between them and the light far preferable to colouring the lens itself, as the shade appears to protect the lens from the heat of the lamp, and so prevents its being cracked; the thin glass shade expanding or contracting more freely does not so easily crack, nor is it exposed when very hot to the cold spray as is the lens. Moreover, if cracked, it is readily and inexpensively replaced.

H. G. Andoe, Rear Admiral.
John S. Castle.

24th July 1895.

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No. 4.—Report on Side Lights of Ships in the Tyne District.

The lights I investigated were those of steamers, taken quite by chance, without previous selection, and fairly representative of their class.

Five ships were inspected, and in four of these there was a striking want of cleanliness in all that concerned the lighting apparatus and glasses, which I attribute either to a lack of sufficient hands on board, or to ignorance of the great importance of freedom from dirt and oil in ensuring that the lamps give their full complement of light through clear glasses, as well as that they show over the full arc of 10 points.

Many lamps fitted so loosely in their seats as to be easily subject to misplacement, and consequently to alteration in the direction of their light.

Some lamp frames were fitted with two slides, one for use with vegetable oil, the other for use with mineral oil. Should an error occur in the use of the slides the light would be somewhat affected.

In the case of one steamer which had lights fitted in lighthouses, the lower part of which formed w.c.'s, the

lamps could only be got at with difficulty, and I think the three ½" strips down the protecting glass of the towers tends to diminish the light.

The burners were generally placed at an angle of 45° with the fore-and-aft line of the ship, but owing to the burners being fitted with screws, this angle might sometimes not be reached or it might be exceeded. These facts emphasize the desirability of there being some uniformity in the pattern of lamps. They need not necessarily be of an expensive material, but all should follow one pattern, the cost varying according to the materials used. There is no reason against, nor any mechanical difficulty in carrying out such an idea.

*Steamers examined, with Angles of their Side Lights.*

| Steamer. | Angle of Starboard Light. | Angle of Port Light. |
|---|---|---|
| "Bakuin" - - - | 4½° | 4½° |
| "Terra" - - - | 4⅓ | 2½ |
| "Flamboro" - - - | 1 | 0 |
| "Stag" - - - | 1⅛ | 4⅜ |
| "Prudhoe Castle" - - | 2¼ | 2¾ |

D. WILSON BARKER.

Two photographs of kind of lamp used in Tyne district are enclosed.

*Note on the Position of Lights in Steamers.*

The following are particulars as to the position of the side lights with regard to the masthead light in 162 steamers of all sorts (excepting tugs or such like small vessels):—

5 had their side lights directly under, or in the same vertical plane as the masthead light.
13 had their side lights before the masthead light.
144 had their side lights abaft the masthead light.

D. WILSON BARKER.

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No. 5.—REPORT on SIDE LIGHTS of VESSELS in the CLYDE.

In August and September I visited Glasgow and Greenock with the object of reporting on the practice of fitting side lights in British and foreign vessels in the Clyde.

I visited as many vessels as possible, and also several lamp makers' places, and I inquired as to the surveyors' practice, both in Glasgow and Greenock, with the view of determining the accuracy of their method of getting the angles in screening the side lights.

*Firstly*, as regards the surveyors' mode of operation, I found that both in Glasgow and Greenock the surveyors tested their first determination of the 4° angle by enlarged similar triangles, a most excellent plan for securing accuracy of screening.

*Secondly*, as regards lamp making in Glasgow, I may say that I was desirous of testing Mr. Harvie's statements in answer to my questions (*Q.* 3666): Do the Clyde surveyors compel you to put the wicks at right angles to the fore and aft lines of the vessel?—*A.* Yes. *Q.* 3667. Because the instruction issued to them is that the wick-holder should be placed in the position of greatest efficiency?—*A.* Well, that may be so, but the difficulty about the thing is that the surveyor will pull out his book and show you private instructions, and the book does not hold with that.

Now, I am bound to say that after what appears to me to be sufficient investigation, this statement of Mr. Harvie's as to the practice of the Clyde surveyors is not borne out. No other lamp maker whom I visited had ever heard of such coercion on the part of the surveyors, and none of these makers puts his wicks at right angles to the ship's fore-and-aft line. Straight wicks are usually placed parallel to the chord of the lens, and, in the case of one type of excellent lamp much used in the Clyde, having a lamp with a curved wick, the horizontal curve of the wick is concentric with the horizontal curve of the lens. I believe one of the diagrams of wicks in the public (not private) instructions issued to the Board of Trade surveyors has a straight wick drawn at right angles to the ship's fore-and-aft line, and I am reluctantly compelled to think that Mr. Harvie must have had something of that sort in his mind when he made his statement—a statement which appears to me to reflect unjustly upon the surveyors of the Clyde, who are men of great ability and tact.

Before leaving lamp construction in Clyde workshops, I may point out that unless the cost of side lights is to be much increased, makers must still be allowed to cut three lenses out of one cast circle of glass. Now the Board of Trade have recently recommended or enforced the increase of the length of arc of the lens, so as to overlap at both ends the ten-point arc, the object being to allow a margin at both extremities of the lamp for dirt in badly-cleaned lamps, and to prevent this dirt encroaching on the necessary ten points of illumination. Mr. Samson specially spoke to this. It appears that the makers of less expensive types of lamps still cut three arcs out of one circle; but this, with the extra dirt-trap arc, makes the third of the circumference of the circle of glass come rather within the ten-point clear arc; and two methods are adopted by makers to approximately remedy this; one is to turn the whole lamp round horizontally, so as to allow plenty of the clear glass fore and aft, which results in scrimping the light two points abaft the beam; the other is to put the wick closer to the lens than its proper position in the centre of horizontal curvature of the lens. Both plans are bad. In the first case the full light is apt to fail to show two points abaft the beam (one case which I measured gave the centre of the wick about two points abaft the beam); but this, perhaps, is a matter of not much consequence. In the second case the practice of putting the wick nearer the lens is radically bad, because it not only prevents the light from passing through the lens without refraction (actually in this way lessening the necessary ten points of uniform unbroken light), but it tends to increase the chance of breaking the lens by bringing the light (and therefore heat) nearer to the lens.

The greater part of the Clyde made lamps appear to have a thin film of colouring matter put on the coloured lenses. The very bad practice of colouring the lens right through does not seem to be adopted; and the practice of using white lenses with a flat coloured shade interposed between the source of light and the lens does not seem to be common, although this last is a good plan (provided the flat shade has no optical defects) as it diminishes considerably the chances of cracked lenses; and indeed white glass shades are fitted for that purpose in some optical lanterns used in scientific investigation. I may say, however, that notwithstanding the practice in the Clyde, I saw only one cracked lens, and the crack in that case did not interfere with the optics of the lantern.

*Thirdly*, as regards the screening &c. of the lamps which I examined in ships, it appears that little or nothing is to be desired as regards British vessels. If anything is faulty it is the poor character of the type of light used in some of the smaller coasting sailing vessels.

But the same thing can hardly be said of the vessels under foreign flags. In these the faults are two: 1st, the fixing of the lamps; 2nd, the character of the spare lamps for replacing the original lamps.

In regard to the second of these points, I may briefly say that in every case inspected the replacing lamps were smaller than the original lamps, and their light would cross the bow at a smaller angle than the original lamps.

But the point calling for special condemnation is the flimsy style of fixing the lamps. For instance, I saw a case where a cargo steamer of considerable size had her lights of the type of arrangement so common (viz., drawn inboard without detaching the screen when in harbour, and pushed out when at sea); and with the whole arrangement fixed in position when in use by a weak hooked stay, capable of being easily bent by the blow of a sea, and when bent throwing the screens, lamps, and angles of screening out of adjustment.

Other instances (extremely abundant) are to be seen in sailing ships which have their screens and lamps attached to a kind of removable davit, so as to be taken out of position entirely when in dock (and possibly also at sea). This removable arrangement sometimes has the screen box detachable and detached from it, and sometimes the box remains permanently attached to it. In numerous cases of vessels in dock, these stanchions, with or without the screen box attached, were lying

App. 20, No. 5.

promiscuously about the deck. Where the screens were detached, the stanchions formed handy levers for purposes about deck. No wonder need therefore be expressed that the stanchions were, in almost every case inspected, bent. The consequence would be that the screens and lamps would be thrown out of proper adjustment.

In one sailing vessel (a foreigner) examined more in detail, I found that the starboard lamp in use was a fish globe lantern (it was explained that the one first furnished had been broken), and the port lantern in use was a dioptric one. On testing the screening it was found that the outer edges of the wick were apparently crossing the outer edge of the screen at an angle of 4°; but a scrutiny of the screens showed that both were 2o out of the fore-and-aft line, thus reducing the 4° of crossing to 2°. When the spare lamps were produced I found that these were smaller than the lamps in ordinary use.

The foreign vessels whose lamp arrangements were defective belonged to the north and to the south of Europe; none of them were French and German.

The conclusion appears to be that considerable improvement in the side lights of these vessels is desirable, and failing that, it is evident that nobody will ever be certain what the lights of these vessels will be screened to.

J. Bolam.

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## APPENDIX No. 21.

*Abridged and Amended Paper handed in by Vice-Admiral P. H. Colomb.*

App. 21.

SUMMARY HISTORY of the RULE OF THE ROAD AT SEA, showing its bearing on SCREENING.

The earliest note of a rule of the road is by Sir Rich. Hawkins, 1593.

In the time of Charles II. in the Navy, junior officers "gave way" to seniors.

Before 1780 this was altered; when it was necessary for them to cross near each other, ships on starboard tack held their wind, and ships on port tack "bore up" and "passed to leeward."

In 1780 all ships on port tack "bore up" for ships on starboard tack.

In 1799 "the ship on the starboard tack was always "to keep the wind, and that on the larboard tack was "always to pass to leeward, except in cases where "extreme danger might arise from a strict compliance "with this instruction." Ships at night carried one light at each cathead, and were to show a second light at the weather cathead if they intended to bear up, and at the lee cathead if they intended to hold their wind. (Really one light at starboard and two lights at port cathead.)

In 1831 a Committee of House of Commons recommended that when two steam vessels found themselves "unexpectedly near each other 'stem on,' they were "to put their helms a-starboard." This was in view of river navigation.

In 1836 a Royal Commission declared that the rule for sailing vessels "that when two vessels meet on "contrary tacks, the one on the larboard tack should "bear up, and that upon the starboard tack should keep "her wind, had been attended with the best effects."

They proposed that steamers in rivers should "keep "on that side of the river or channel which lies on "their starboard hand." It was proposed to display lights on a yard across steamers' masts, with lights to denote going up or going down the river.

In 1832 the rule in the French navy "expressly ordered" the ship on the port tack to bear up, and the ship on the starboard tack to hold her wind.

*Note.*—That until 1839 nothing was said of "close-hauled" and "free" ships. Nothing of steam or other ships porting their helms except the proposal of the Commons Committee in 1831.

*Note again.*—That the only rule known in the open sea was that the one ship should keep her course, and that the other should *turn towards her and pass under her stern.*

In 1839, the rule in the Navy was: "When ships on "different tacks must pass near each other, the ship ON "THE STARBOARD TACK IS ALWAYS TO TO KEEP THE WIND, "and that on the larboard tack to pass to the leeward, "bearing up in time for that purpose.

"When STEAM VESSELS not under sail, but on different "courses, must unavoidably or necessarily cross so "near that by continuing their respective courses there "would be a risk of coming in collision (*Note* that "this was the first time any such expression was used) "they are always to pass ON THE LARBOARD SIDE OF "EACH OTHER.

"A STEAM VESSEL passing another in a narrow "channel must always leave the vessel she is passing "ON THE LARBOARD HAND."

These two last were nearly the rules published by the Trinity House in 1840 for general use. The preamble ran: "Whereas the recognised rule for sail-"ing vessels is that those having the wind fair shall "give way to those on a wind."

(*Note.*—There was no such rule at the time known either in the English or French Navies.)

"That when both are going by the wind, the vessel on the starboard tack shall keep her wind, and the one on the larboard tack bear up, thereby passing each other on the larboard hand.

"That when both vessels have the wind large or abeam and meet they shall pass each other in the same way on the larboard hand (*Note* that there was no such rule at the time in the English or French Navies); to effect which two last-mentioned objects the helm must be put to port. (*Note* that the helm of only one ship was put to port in the first case.)

"And as steam vessels may be considered in the light of vessels navigating with a fair wind, and should give way to sailing vessels on a wind on either tack, it becomes only necessary to provide a rule for their observance when meeting other steamers or sailing vessels going large."

The rules above were then promulgated, having no doubt been agreed upon with the Admiralty the year before.

*Note.*—That besides professing to base the new rule on other rules which were unknown to the English and French Navies, the analogy was wrong, for in any case crossing, with the courses at greater or less angles was the position to be provided for; and a rule analogous to this for sailing ships would have directed the steamer with the other on her port side to keep her course, and the steamer with the other on her starboard side to have put her helm to port to pass under the stern of the other.

At this time steamers carried one white light at the masthead, and were given no means of distinguishing their port from their starboard side, which sailing vessels had possessed for so many years.

In 1844–5 Messrs. Chapman and Company circulated a paper, afterwards well known as "Chapman's Rules" which were held to embody the existing law. It gave the rules in short, as above, and proposed a new (and properly necessary) rule that free sailing ships should carry a single light at each bow to distinguish them from steamers with the single light at the mast head, and sailing vessels by the wind, with one light on the starboard bow and two lights on the port bow.

In 1846 an Act for the "Regulation of Steam Navigation" ruled that steamers were to pass port side to port side, and to the starboard side of narrow channels.

About 1848 red and green side lights had been partially introduced in the Navy.

In 1851 an amending Act made—apparently by mistake—this rule applicable to all British ships, sailing as well as steam, but made no corresponding change in the lights.

*Note.*—In this Act the full expression "risk of collision" was used for the first time. The courts have sometimes ruled that the law is to prevent "risk of collision," and should be put in force before it arises.

In 1852 the red and green side lights were ordered to be carried by all British steamers, but no change to correspond was made in the rule of the road.

In 1854 the Act ruled thus:—

"Whenever any ship, whether a steam or a sailing ship, proceeding in one direction, meets another ship, whether a steam or a sailing ship, proceeding in another direction, so that if both ships were to continue their respective courses they would pass so near as to involve any risk of a collision, the helms of both ships shall be put to port, so as to pass on the port side of each other."

*Note.*—That the law was to be put in force not *after* risk of collision had arisen, but in order to prevent any such risk arising which would have arisen if the law did not step in.

*Note.*—That Admiral Beechey, who was the promoter of this law, published a justification of it next year. He drew diagrams to show that ships in turning moved over the arc of a circle of considerable magnitude. But he did not produce a single diagram applying the data to his rule in any ordinary case of ships approaching each other whose paths crossed at large or small angles. He only gave the exceptional case where paths crossed at right angles and each ship travelled in turning towards one another over an identical path. If he had applied his data he would have seen (1) that his rule would take ships into collision when if they had let things alone they would have gone clear; and (2) that where there was a real risk of collision both ships porting their helms would make it certain, while if both ships turned towards one another—one ship starboarding and the other porting, collision would have become impossible.

In 1860 a Parliamentary Committee condemned this rule as "most unsatisfactory, however the decisions of "our Courts of Admiralty may have modified its "dangerous tendency."

*Note.*—What the Court of Admiralty did was to hold generally that for sailing ships whose courses crossed at a greater angle than about two points, the old rule for crossing ships, and not the new one, held good. For steamers they could not limit the new rule, for there was no other.

New rules were devised of considerable complexity. Though it could have been shown that even within the two-point crossing angle collision under port helm was certain, when if one of the ships starboarded *towards* the other it became impossible, yet the new rules made no crossing rule for steamers, and altered the old rule for sailing vessels by changing the phrase "give way," which clearly meant "pass under the stern," to "keep out of the way," which left it designedly open to the old "giving-way ship" not to give way, but to leave an unregulated struggle between the ships as to which could cross in front of the other. But while the old "giving-way" ship was thus authorised not to "give way" she was forbidden, if a steamer, to use the speed which might be necessary to make the manœuvre a safe one. In the same way the steamer and the sailing ship were authorised to contend for the right of crossing—a right which it had been the whole aim of the old rules to keep sacred for one ship of the pair.

But the new rules prominently retained the rule, both for sailing ships and steamers, that directed port helm for both on approaching, and which had been so strongly condemned by the Parliamentary Committee. It was hoped to restrict its evil influence by limiting it to the undefined and undefinable position of "end-on or nearly end-on."

Before the new rules passed into law, a crossing rule for steamers was introduced on the recommendation of the French Government, which would have been strictly analogous to the old rule for sailing ships crossing on opposite tacks, had the phrase used been "give way" instead of "keep out of the way," which was that introduced.

The limit to the port helm rule stated in the new Rules had little or no influence on the decisions of the Admiralty Court, or even over the courts set up by the Board of Trade, or on the Wreck Commissioner's Court. The Admiralty Court still held generally that port helm for both ships was proper when the courses crossed at any angle up to two points; and further generally held that it was not lawful for two ships to pass one another starboard side to starboard side, unless the distance likely to be between them in passing was considerable.

As the very large number of collisions had always occurred under the conditions within which the port-helm rule was held to act, it followed that the great majority of the decisions, especially in night cases, were delivered under the port-helm rule, and the ship which had not ported was generally condemned. The natural result was that the condemned law of 1854 continued in full operation. It became a matter of little consequence to the seamen what coloured light or lights were seen, or where they were seen. It was a legally safe thing to port the helm, no matter what came of it, and the claim to have ported the helm was generally made.

Before 1863 (in 1858) sailing ships had been directed to carry coloured side lights according to the rule for steamers; but the usual screening adopted allowed the rays to cross 9°, or even more, to the wrong bow. Practically it may be said that both lights were generally visible from a position of a point on one bow of any ship to a point on the other bow. In many collision cases both lights were seen from either ship at some time before the collision. But as on the one hand, the rules were held to oblige a steamer to port her helm to a green light shown by another steamer, when it was at all fine on the starboard bow; generally to port the helm if such green light was seen on the port bow; and in any case which was clearly not "end-on or nearly end-on" allowed her to starboard the helm to a steamer's red light seen on the starboard bow; or in any case of approaching a sailing vessel, to port the helm to her green light, or to starboard it to her red one; the colours of the lights had lost all significance for steamers. They acted independently of colour; and whether one light or both lights were seen was not of consequence.

It was the same for sailing vessels amongst themselves. The port helm rule for "nearly end-on"—or as they were then called in the courts, "meeting" cases—necessarily ignored the colour of the light seen. In "crossing" cases, the new rule had expressly authorised the ship on the port tack to ignore the red light seen and to starboard her helm to it.

No question could have arisen as to the screening of the lights under such conditions of the law. It did not matter how much the lights showed on the wrong bow, because if the lights seen might possibly denote a "meeting" case, the helm must be ported without reference to the colour of the light seen; if the lights seen seemed to denote a "crossing" case it was always a matter of "judgment" which way to put the helm.

Moreover, the state of the law as it bore on the screening of the lights was this: a ship might have ported her helm to a red light seen very nearly ahead, and while she was turning, might see the green light added to the red, and then see the red light disappear, and yet not be justified, under the law, in reversing her helm.

Up to 1867, none of all this mischief was seen. The practice of porting the helm was almost universally held to be a good one, and the rule a good rule. Collisions were held to be caused, not by the ship which had first of all ported her helm, but by the ship which had either delayed or neglected to port. It seemed to be nowhere understood (1) that the cases where a collision otherwise probable, but avoidable, could only be avoided by both ships porting their helms, were, and must be from the nature of ship's movements, infinitely rare; and (2) that the cases where probable collision, otherwise avoidable by proper helm, would be made certain by both ships porting their helms, must be, and were, very common.

It seemed nowhere to be understood that coloured side lights, properly screened so as to show as little as possible on the wrong bow, were of themselves—provided the signals made by them were obeyed—a very perfect preventive of collision without any rules at all. It was nowhere understood that, according to the nature of ships, a properly screened *green light* seen in any direction was a clear signal *not to port the helm*, and in certain directions was a signal to *starboard* the helm; that a properly screened *red light*, seen in any direction, was a clear signal *not to starboard the helm*, and in certain directions was a signal *to port the helm*. Moreover, that *a change from red to green* anywhere ahead was always a signal *to starboard the helm*: while *a change from green to red* was always a signal *to port the helm*.

The disaster to the "Amazon" and "Osprey" in 1867 only partly revealed the mischief underlying the law and the screening of the lights. The defect of screening was here that the "Osprey" saw, nearly ahead, only the "Amazon's" red light when she ought only to have seen her green. The defect of the law

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was shown, inasmuch as it justified the "Osprey" in continuing port helm after she had seen green added to red by the crossing of the "Amazon's" lights to the wrong bow, and then green only visible by the starboarding of the "Amazon's" helm. The justification for the law was that the movement of the "Amazon" was illegal. But it was not shown to be necessary that the illegal movement of one ship should consign both to destruction. Nor was it shown to be necessary that the law should enjoin disobedience to the plain signals made by the lights.

If the "Osprey" was directed by the law to port her helm, she was directed by the lights she saw to starboard her helm; and it was not shown to be necessary that she should be placed in such a dilemma.

So, as the points were not clearly seen, the steps taken were not such as to prevent the recurrence of similar accidents. No immediate steps were taken to place chocks so that the green light should cross as little as possible to the port side; and that the red light should cross as little as possible to the starboard side.

The "Explanatory Clauses," introduced in 1868, only aimed at limiting the crossing angle within which the port helm rule was to operate; they did not in the least aim at preventing repetitions of the "Amazon" and "Osprey" accident. In 1878 the "Bywell Castle" destroyed the "Princess Alice" and 600 lives under precisely similar conditions, and was justified by precisely the same reasoning that justified the "Osprey" in 1867. The "Bywell Castle" had a distinct order from the law to port her helm, but she had a distinct order from the "Princess Alice's" lights to starboard her helm. She was left in the same dilemma as the "Osprey," and judgment remained to the effect that the signals made by the lights could not be brought into harmony with the law; that the safety of shipping was better guaranteed by a law which was devised before coloured lights were devised, than by accepting the signals made by the lights as the better guide.

But on the other hand the "Explanatory Clauses," which limited the obligation to port the helm to those cases where those in the one ship saw both coloured lights in such a position as led them to suppose those in the other ship saw both of theirs, had a distinct effect, though they said nothing to relieve a ship from porting her helm when the *addition* of the green to the red light gave her a distinct signal to starboard it; yet, even with lights seen a point on the wrong bow, they made the Admiralty Court take cases under the "crossing" rule which would formerly have been taken under the "meeting" rule. And, though the "crossing" rule permitted seamen to ignore the colour of the lights seen, it was a step in advance, for seamen did retain in many cases a clear idea that a green light ahead or in the bow was a signal not to port the helm.

But the clauses, by directing attention to the screening of the lights, and by causing the introduction of chocks upon the screens which at least greatly limited the arc over which both side lights could be seen together, did greatly lessen the influence of the port-helm rule. And though it may not yet be fully comprehended that such a rule is always either unnecessary or dangerous, yet the improved screening of the lights has almost wholly destroyed its influence. Seamen so seldom see both lights together in any position that they rarely feel themselves under an obligation to port their helms, unless they have good reason to know that it is a seamenlike, and not merely a legal, act. The result is that they are better prepared to use the helm which the colour of the light seen prescribes, and no other, than they used to be.

Now, when the Washington Conference Rules for crossing ships become law, the confusion as to the meaning of colours—first introduced by retaining a port-helm rule for steamers and sailing vessels when the introduction of the coloured lights had taken away all excuse for it; and enforced by the abolition of "giving way" in the rules of 1863—will be greatly cleared away.

It will then no longer be free to the "giving-way ship" not to give way. A "giving-way ship" porting to a green light, or starboarding to a red one, according to her "judgment" at the moment, must justify a movement which, unless it can be justified, will be illegal. At present such movements rarely meet distinct condemnation in the courts; they could not, because the phrase "give way" was expressly abolished in order to permit them. But under the new law, such movements will be fastened on by Counsel as *primâ facie* illegal.

As no collisions involving coloured lights occur unless this disobedience to signals occurs also, we may certainly expect the happiest results to follow the change in the law. But then it is absolutely necessary so to screen the lights so that they show as little as possible on the wrong bow.

To the extent that they show on the wrong bow we are (1) encouraging the action of the condemned, and demonstrably evil, port-helm rule; and (2) counteracting the intent of the new law which aims at enforcing obedience to the signals made by the lights seen.

P. H. Colomb.

August 20th, 1895. Vice-Admiral.

## APPENDIX No. 22.

App. 22.

Diagram* showing that when side lights are screened to 0° from the outside edge of the wick, the area of obscuration is increased as the screen is lengthened. *See* Report, p. 9.

## APPENDIX No. 23.

App. 23.

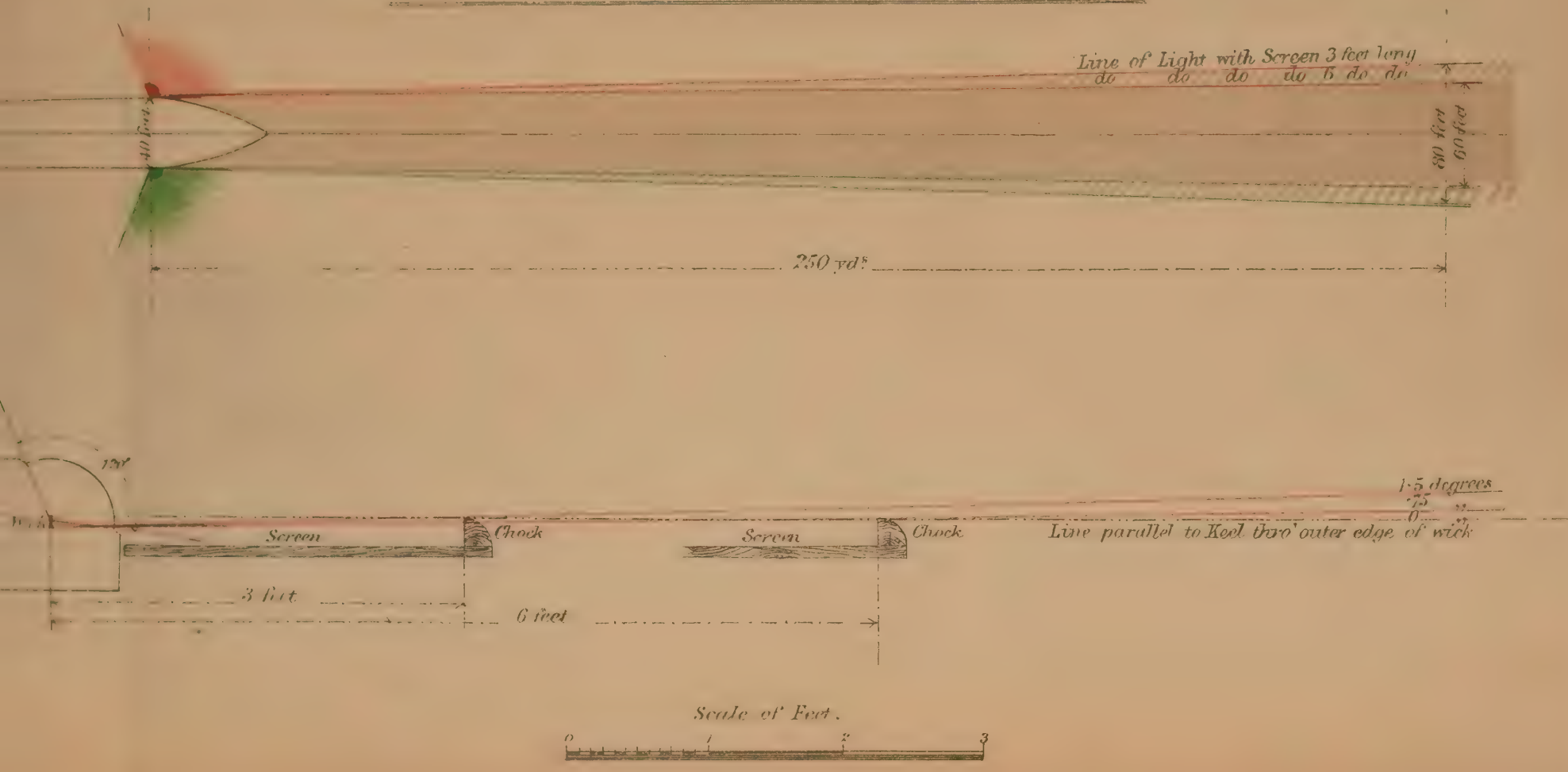
Diagram,† based on the Committee's experiments in June and July, 1895, showing the relative magnitude of the field of mingled rays when side-lights are illuminated with oil and with electricity. *See* Report, p. 15.

* Plate XXXI.

† Plate XXXII.

# Appendix 22.

## Diagram Showing that when Lights are Screened to 0° from the Outside of the Wick the Area of Obscuration Becomes Smaller as the Length of the Screen is Increased.



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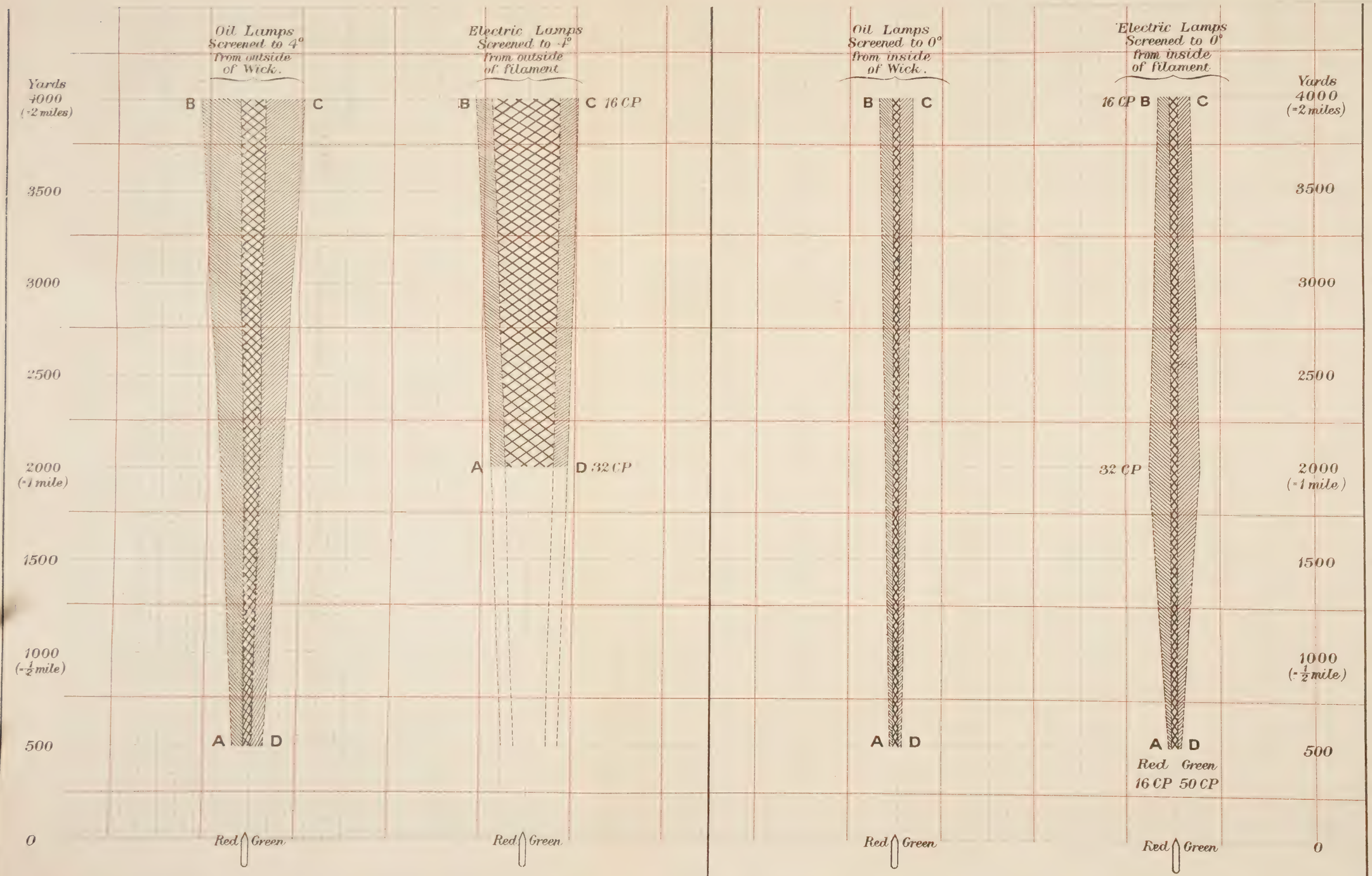
# COMPARISON OF THE FIELDS WITHIN WHICH BOTH SIDE LIGHTS OF OIL LAMPS AND ELECTRIC LAMPS CAN BE SEEN.

*Shoeburyness Experiments of 12th, 13th, 14th June and 25th, 26th July 1895 by the Side Lights Committee.*




## EXPLANATION.

*The Space cross hatched shews the space in which the full force of both Side lights was seen.*

*The Space shaded shews the space in which the green light was seen, but becoming less strong untill it disappeared.*

*The Space shaded shews the space in which the red light was seen, but becoming less strong until it disappeared.*

*The Areas ABCD therefore measure the spaces within which another vessel could see both Side lights of the vessel in the diagram.*

*The four diagrams accurately represent what was seen at the Shoeburyness Experiments of 12th 13th 14th June and July 25th 26th 1895 with Oil Lamps and Electric Lamps with the wicks and filaments similarly placed in the lamps and similarly screened so as to make the results of the observations comparable*

*Everything, including the vessel, is drawn to the scale of 500 yards to the inch.*

*The field between AD and the vessel exhibiting the lights is not filled in because the observations did not supply sufficient materials for that part of the field*

J Bolam.

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